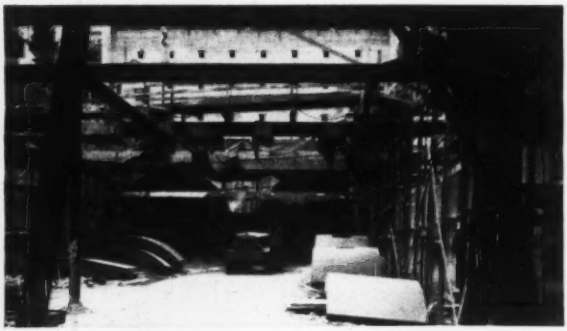
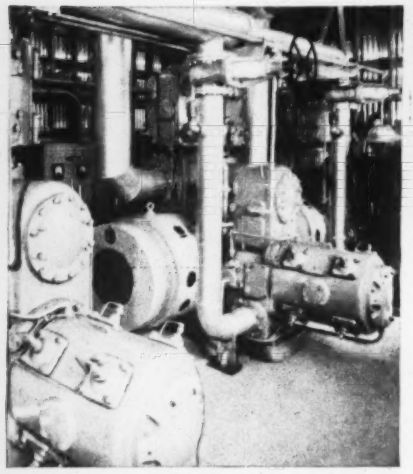
ENGINEERING NEWS-RECORD

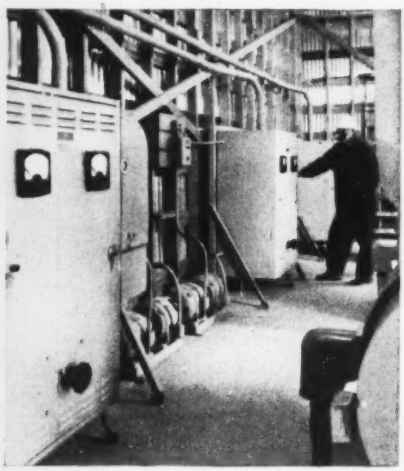
A McGRAW-HILL PUBLICATION

San Francisco's new twin-bore tunnel will be 3400 ft long portal-to-portal with a 1600-ft enclosed bore. Air for the construction tools and equipment is distributed from a central source under 100-lb pressure through 6-in pipe





A G-E 150-hp 440-volt, 600-rpm synchronous motor drives each of the three 930-cfm Ingersoll-Rand compressors. Motors and compressors run 24 hours a day, five days a week



G-E control for each motor consists of a semi-magnetic starter providing reduced-voltage starting and complete motor protection. G-E motor-generator sets supplying field current are controlled by G-E magnetic starters mounted above them.

AIR for BOTH
TUNNELER AND TRAVELER
... *Electrically*

G-E motors and control drive compressors for construction equipment and permanent ventilating blowers at San Francisco's Broadway Tunnel

Compressed air to operate the more than 100 tools, hoists, and muckers being used by the Morrison-Knudsen Construction Co. in work on San Francisco's Broadway tunnel is supplied by centrally located compressors driven by G-E motors and control. Used in place of numerous individual units, the central air supply cuts maintenance costs and adds flexibility to the tunneling operation.

Expressing complete satisfaction with the system, Assistant Project Manager Harry Kirmond reports outstanding performance from G-E drives: *no unscheduled downtime has been charged to the drives up to the ha'f-way mark in the two-year project.* And when the tunnel is complete, G-E equipment will still be on the job in the form of ventilating-equipment drives, and complete distribution facilities for lighting.

This is another excellent example of the flexibility, speed, and economy that G-E electrification can give you on construction jobs. *General Electric Company, Schenectady 5, N. Y.*

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Whether you buy or build construction equipment, your G-E representative can show you how to do a better job—at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.

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Speeds Construction—
Cuts Costs

GENERAL ELECTRIC

664-15

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The Bethlehem Reinforcing Bar has specially designed lugs which meet the deformation requirements of ASTM Specification A305. These lugs are alternately sloped and uniformly spaced. They provide adequate gripping action in the concrete. They minimize slippage at working loads. They help prevent the formation of wide tensile cracks in the concrete.

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BETHLEHEM REINFORCING BAR DATA

New Bar No.	2	3	4	5	6	7	8	9	10	11
Old Size	¼ in. Round	⅜ in. Round	½ in. Round	⅝ in. Round	¾ in. Round	⅞ in. Round	1 in. Round	1 in. sq. equiv.	1 ⅛ in. sq. equiv.	1 ¼ in. sq. equiv.
Nominal Area (sq. in.)	.05	.11	.20	.31	.44	.60	.79	1.00	1.27	1.56
Nominal Diam.	.250	.375	.500	.625	.750	.875	1.000	1.128	1.270	1.410

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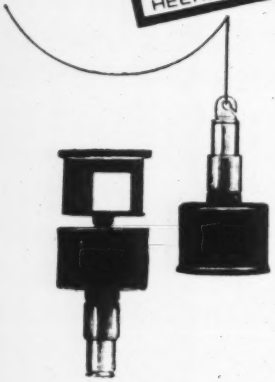

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 147 AUGUST 9, 1951 No. 6

WALDO G. BOWMAN
Editor

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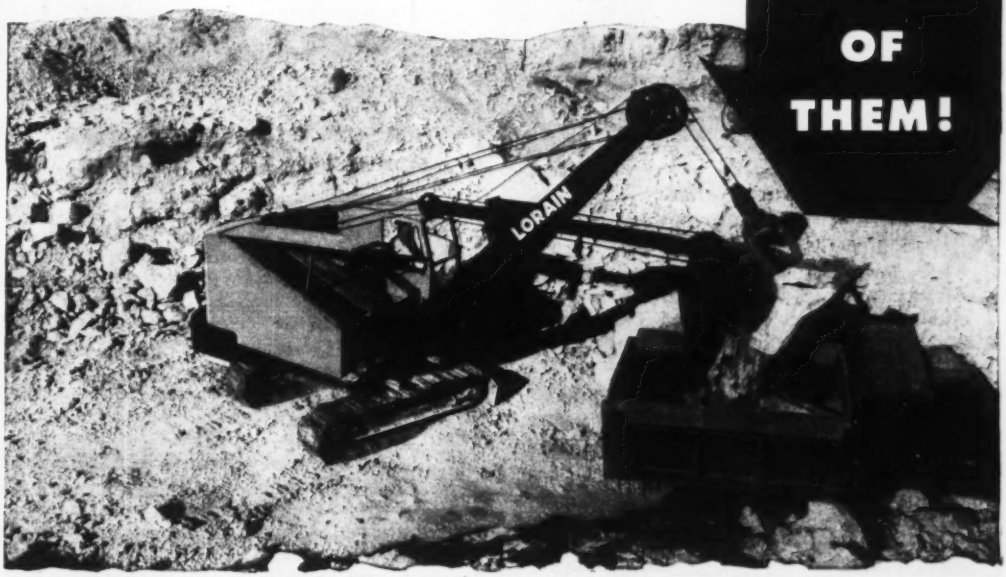

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In addition, there are virtually unlimited variations of the 20 other Fruehauf Standard Trailer types to meet special requirements.

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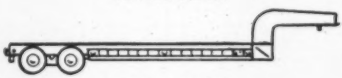
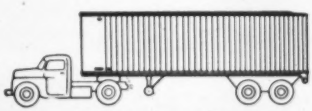


CARRYALL TRAILER

BULK CEMENT TRAILER

DUMP TRAILER



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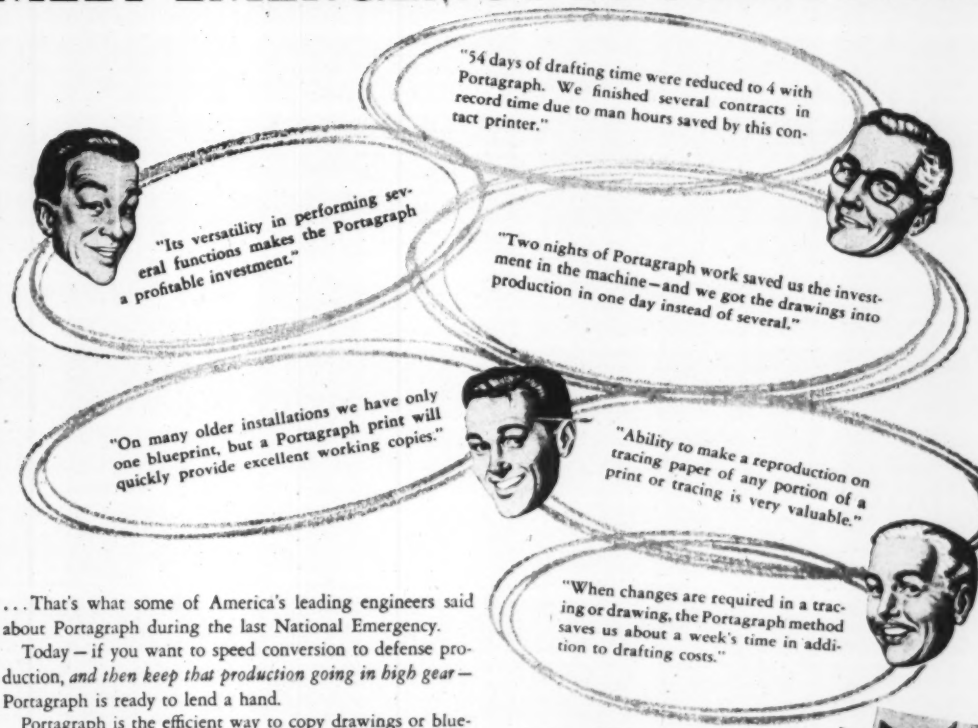
WORLD'S LARGEST BUILDERS OF TRUCK-TRAILERS

Here's how PORTAGRAPH has helped other engineers MEET EMERGENCY PRODUCTION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SAVE TURN TIME GAIN HAUL TIME

On every haul cycle, Koehring fast-shuttling Dumptors eliminate slow turns — at the loading unit, at the dumping point, on sharp, "zig-zag" grades. They gain more productive haul time, because Koehring constant-mesh transmission gives the same 3 fast speeds forward and reverse. Here's how much no-turn shuttle operation can increase your production:

By eliminating only 2 turns on a 1,000' haul, time studies prove that Dumptors can save 30 seconds every round trip, and increase hourly yardage output over 10% per unit. What's more — fast, easy spotting and 1-second gravity dump keep production high.

Remember, too — top hauling efficiency also means increased shovel output. For *double profit protection*, team fast-shuttling Dumptors with Koehring heavy-duty excavators. Four sizes: ½-yd., ¾-yd., 1½-yd., and 2½-yd.

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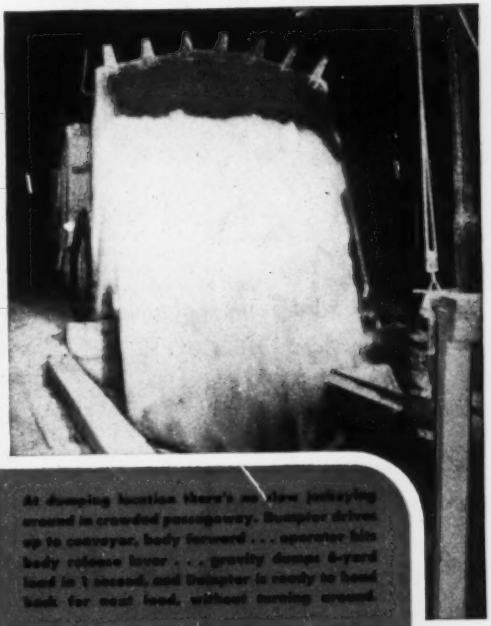
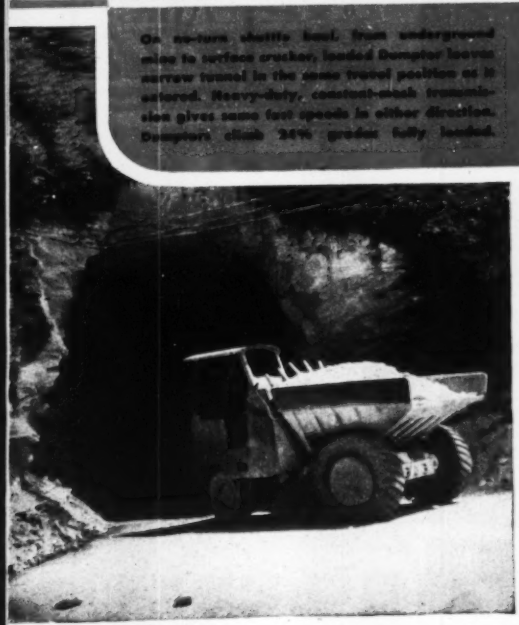
K16

in open pits or underground

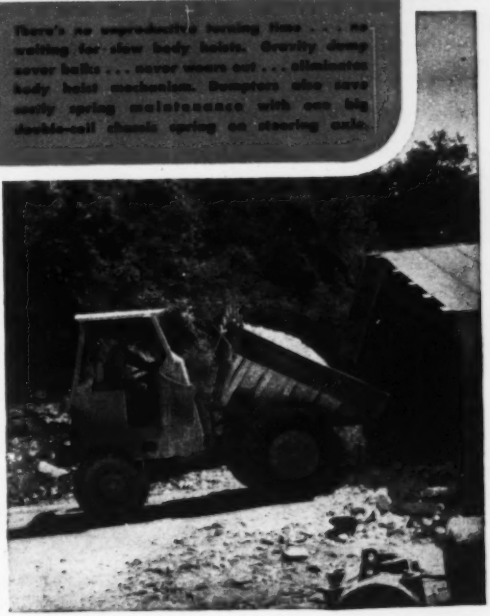
In confined underground operation, Dumpster spots fast, close to shovel . . . no need to turn. Big, flared, 8' x 8' body permits loading over either end or sides. Shovel operator has easy-to-hit target, and short swing. Excavator, shown above with Dumpster is a Koehring ¾-yard 506.



At dumping location there's no slow jockeying around in crowded passageway. Dumpster drives up to conveyor, body forward . . . operator hits body release lever . . . gravity dumps 6-yard load in 1 second, and Dumpster is ready to head back for next load, without turning around.



On return shuttle haul, from underground mine to surface crusher, loaded Dumpster leaves narrow tunnel in the same travel position as it entered. Heavy-duty, constant-mesh transmission gives same fast speeds in either direction. Dumpsters climb 24% grades fully loaded.



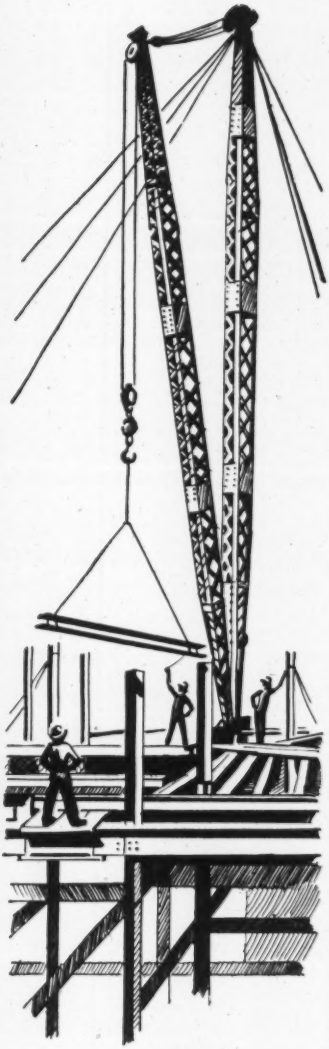
There's no unproductive turning time . . . no waiting for slow body hoists. Gravity dump never balks . . . never wears out . . . eliminates body hoist mechanism. Dumpsters also save costly spring maintenance with new big double-rail chassis spring on steering axle.

When PRODUCTION *hangs by a "Thread"....*

specify the wire rope that gives the greatest service. "HERCULES" (Red-Strand) *Preformed* spools more evenly—bends more smoothly. Handles more safely. Splices more easily. Far fewer replacements are needed.

Engineered to reduce internal tension and twisting, "HERCULES" (Red-Strand) *Preformed* stays on the job—*in* the groove.

For uninterrupted production, there is only one right rope... be sure to select the correct size and type.



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These U.S. Royal Fleetmaster facts add up to *reduced tire costs — increased efficiency — lower maintenance!*

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NEWS BRIEFS

• **Giveaway**—You too can own a lock and dam, for the Corps of Engineers, Huntington, W. Va., is giving away five of them on the Little Kanawha River. First preference is offered to state and local groups and such civic organizations as the boy scouts, girl scouts, campfire girls, etc. Your bid should go to Col. Walter Kreuger, Jr.

• **Meandering dollars**—Around $1,650,000 over the period 1930 to 1949, was skimmed off from the earnings of the Grand Rapids waterworks, to defray general city operating expenses, according to City Attorney Fred N. Scarl. This is the first year such a transfer has been declared openly, Scarl says, under a resolution adopted by the city council.

• **To cooperate**—Birmingham, Ala., has just undertaken a $600,000 five-year national promotional campaign to bring new industries, sales offices and warehouses into the city. A committee of 100 of the town's business leaders has launched the campaign which will include advertising to present the facts behind its post-war industrial expansion. Promotional work brought in 26 new industries last year.

• **A lone bidder**—Fifty-three firms got notice, but only one bid on the Dayton, Ohio, sidehill drainages to prevent water from washing onto the streets and carry it quickly to storm sewers. The bid was $31,967.20.

• **Private parking lot**—The federal Bureau of Public Roads has notified the Ohio highway department it is withholding some $180,000 from the state as payment on the Spring Common Bridge of Youngstown and Mahoning County until a driveway leading to a private parking lot is removed. Earlier owner of the lot gained ingress and egress rights from the county.

• **More on conservation**—The Associated General Contractors of America which has found many benefits in joint cooperative committees with other societies in the past few years has set up another such committee in cooperation with the Producers Council. The Council represents manufacturers of building materials. First meeting will be in September, with the following subjects suggested for discussion: material requirements for defense: standard forms of manufacturers' price quotation; general terms of settlement with sub contractor's escalator clauses and product exhibits.

(*Continued on page 15*)

Now you can lay up to 12″ thickness 11′ wide; lesser thicknesses to 12½′

JAEGER Paver-Type AGGREGATE SPREADERS
for both base and surface aggregates, free-flowing hot or cold bituminous mixtures, plant-mixed stabilized soil.
Cost ½ the price
of bituminous pavers and are better adapted to lay base materials. Also lay top on macadam and bituminous secondary roads, parking areas, drives.
All traction on subgrade
No displacement of loose material. Crawlers or 4-wheel drive, to suit.

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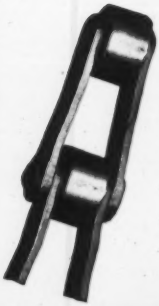
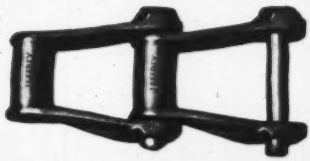
We show only a few types here but Jeffrey builds a complete line from which to choose.





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Streamlined Bridges

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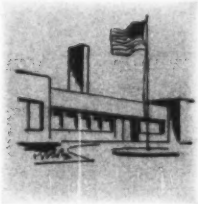
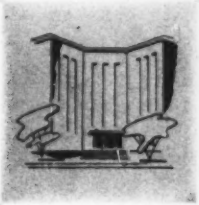


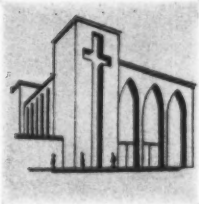
Schools



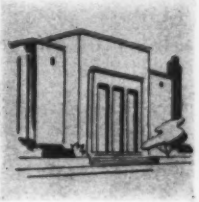
Hospitals

Structural Steel

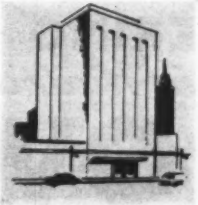
Combines Strength and Endurance with Versatility and Security



Churches

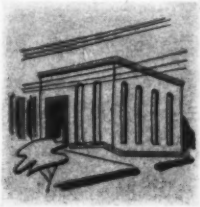


Public Buildings

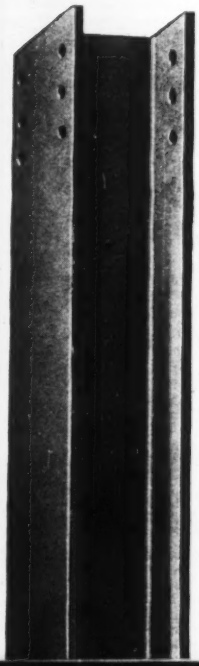


Office Buildings

Fort Pitt Bridge has specialized in structural steel construction for over 55 years. Why not take advantage of this broad experience on your next structural steel project?



Industrial Plants



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Member American Institute of Steel Construction

General Offices, Pittsburgh, Pa. . . . Plant at Canonsburg, Pa.

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. . . Safety.
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PIONEERING *in Hydraulic* POWER –

The Pioneers - those who devoted their lives to the harnessing of one of nature's mightiest forces - water - contributed greatly to this nation's progress! For 75 years, we have built turbines for high, medium and low heads, many types of valves, hoists and gates, pumps, trash rack rakes and kindred hydraulic equipment. Put your problem up to us.

S. MORGAN SMITH Co.

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Briefs . . . .

• **Flagman is boss**—California motorists soon will find that they cannot ignore construction project flagmen and get away with it. A bill has been passed which will make it a misdemeanor with penalty wilfully to disregard the directions of a flagman on road construction jobs. The maximum penalty will be 6 months in jail or a $500 fine, or both. The law will become effective Sept. 22. The legislators were told there has been nothing on the law books to force drivers to obey flagmen.

• **Farm-to-market roads**—The South Carolina Highway Commission has adopted a $48,653,866 budget for 1951-52 which includes $7,000,000 of farm-to-market road construction. The commission rejected a proposal that it set aside $1,400,000 as a fund for the commissioners to spend as they saw fit on farm-to-market roads in their areas.

• **Experienced man**—Oscar Adams, who conducted a private garbage and rubbish collection business in Bellefontains, Ohio, until the city health department recently refused to renew his hauler's permit, has been hired by the city department of garbage and rubbish collection to do the work for the city.

THE COVER

Prime mover in the drive to assure an adequate supply of trained civil engineers to man the nation's defense effort and keep its civilian plant in top condition is Solomon Cady Hollister, who took office as president of the American Society for Engineering Education a month ago (ENR July 12, p. 24).

Now dean of the college of engineering at Cornell University, Mr. Hollister has a broad background of experience both as a businessman and educator. He graduated from the University of Wisconsin in 1916; was an instructor in mechanics at the University of Illinois until 1917; served with the U. S. Shipping Board as chief design engineer from 1918 through 1929 (but found time at the same time to act as a consulting engineer in Philadelphia); was professor of structural engineering at Purdue University; and joined the Cornell staff in 1934, becoming dean of the engineering school in 1937.

American Terrazzo's ruggedly built Bantam cost less than half the price of bigger cranes . . . is mounted on GMC 6 x 6 truck for fast job-to-job moves . . . has lost only 2 hours "down-time" in over 8 months of steady operation.

AMERICAN TERRAZZO CO., Columbus, Ohio, reports amazing economies in handling concrete with a mobile Bantam crane, at new Beverly Manor Apartment project in Columbus. Equipped with ½-yd. concrete bucket on 35' boom with 8' jib, American's truck-mounted Bantam unloaded and placed an average of *6 complete decks (90 cu. yds. of concrete) per day*, besides handling all sorts of other building materials, lumber sheaths, etc. Bantam's ability to place output of 3½ yd. Ready-Mix truck every 12 minutes makes this method "faster, more economical than moving tower set-up previously used on similar jobs," according to owner A. A. Marchi. Why not find out how much you can save by switching to Bantams for excavating, lifting, concrete handling!

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Deliveries are BETTER than you think!

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☐ Literature ☐ Prices ☐ Nearest Distributor
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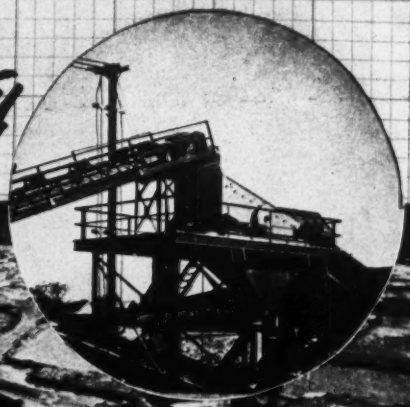
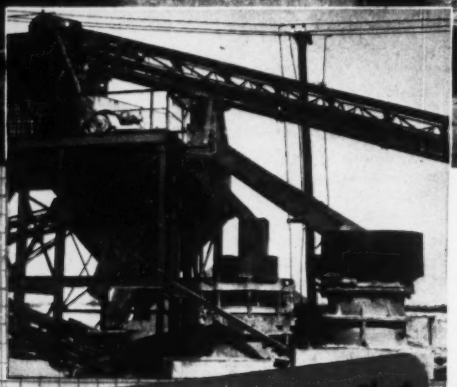
SCHIELD BANTAM
Costs less . . . goes anywhere fast
GETS MORE JOBS DONE

TELSMITH ENGINEERED

for High Capacity... and Super Flexibility





TELSMITH Equipment in This Plant

One (1) 36" x 6' Heavy-Duty Plate Feeder
One (1) 5' x 12' Heavy-Duty 2½-Deck Scalping Screen
One (1) 16-B Gyratory Crusher
One (1) 48-S Gyrasphere Crusher
Five (5) Vibro-King Finishing Screens 5' x 12', 4' x 12', 4' x 10' Triple Decks, 4' x 12' Double Deck
Nine (9) Telsmith-BG Conveyors 30" to 18" wide and 366' to 45' long

Barbers Corners Crushed Rock, Washed Sand and Gravel Plant of the Elmhurst-Chicago Stone Co., Elmhurst, Illinois. (Top) one of several Telsmith Vibro-King Screens; (left) Telsmith Scalping Screen, Gyratory and Gyrasphere Crushers.

FIVE-WAY EFFICIENCY — (1) High Capacity ... (2) Super Sizing-Flexibility ... (3) Simplified, Automatic Controls ... (4) Large Storage Capacity ... (5) Fast Truck-Loading ... makes this plant unique. Because it is not only Telsmith engineered but largely Telsmith equipped.

THREE-SECTION DESIGN — This outstanding sand and gravel plant can produce—In Section One, minus 1" pit-run road gravel. In Section Two, four sizes of washed gravel, and sand. In Section Three, five sizes of crushed gravel and one of aglime. This three-section plant consistently and economically produces 350 tons per hour.

CONSULT TELSMITH ENGINEERS for newest developments in aggregate production. Send for Bulletin 266.

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THE CONSTRUCTION WEEK

ANOTHER STAR FOR PICK—It's now Lieut. Gen. Lewis A. Pick, Army Chief of Engineers. The Senate confirmed his stepup in rank, and last week he received his new star and flag from Gen. J. Lawton Collins, Army Chief of Staff.

EMERGENCY SLASHES RED TAPE—National Production Authority has granted overriding priority for materials and equipment to help rehabilitate flood-stricken industries in Kansas and Missouri. The Kansas City NPA office is open from 8:30 a.m. to 6:00 p.m., Monday through Saturday, during the emergency period and helps locate scarce materials.

MAN ON THE MOVE—Maj. Gen. Thomas F. Farrell, deputy administrator of the Defense Production Administration since last March (ENR Mar. 15, p. 26), has been appointed assistant general manager for manufacturing, Atomic Energy Commission. Gen. Farrell is on leave from his post as chairman of the New York Housing Authority—having been recalled to active Army service last year. He is on military assignment to AEC from the Army and his new responsibilities include the construction of new production facilities, management of production plants and of all operations concerned with getting supplies of uranium and other raw materials.

SOME NEW CONVERTS—Lieut. Gen. Lewis A. Pick, Army Chief of Engineers, mellowed a bit toward soil conservation at the recent emergency meeting called by Missouri Basin state governors. He praised conservation as an essential part of the Missouri Basin program, but he is more wrathful than ever toward enthusiasts who claimed formerly that upland dams would prevent big floods. His bitterly-contested position has won a powerful convert; the influential Capper publications did an about-face as a result of the flood and came out for the Army's flood-control program.

ARE WINDOWS OUTMODED?—Windowless defense plants came into vogue during World War II. But commercial buildings may have to carry on in the old-fashioned way a little longer. Recently, Safeway Stores, Inc., designed a new supermarket for Tucson, Ariz. —without windows in the walls. The city council withheld design approval, said the windowless front elevation made the store look like a warehouse. Safeway argued that the solid wall design was practical; the store was to be air-conditioned by refrigeration and no window displays were contemplated. Compromise: Glass brick panels replace the solid masonry along the front.

CARIBBEAN BOOM—Puerto Ricans point to an almost fantastic building boom on their island this year as evidence of progress in modernization and making the territory self-sufficient. Building permits indicate residential construction for the first six months of the year that topped 6,000 units; and expenditure of about $75 million in all on building construction for the period. That makes building the island's third largest industry.

DEFINITELY FOR H-BOMBS—After months of hemming and hawing, the Savannah River operations office last week revealed the purpose of the Atomic Energy Commission's $900-Million Plant in South Carolina: "To produce materials which can be used for either A-bombs or H-bombs." The dual purpose means that the plant's output won't be wasted; it can be used in A-bombs if the H-bomb proves impractical.

Contracts by type of work

	This Week	Cumulative 32 wks 1951	1950	% chge
Waterworks	$2.3	$137.8	$137.3	+0.3
Sewerage	9.2	199.9	155.9	+28
Bridges	7.9	204.0	235.2	−13
Highways	31.6	735.8	805.5	−9
Earthwork, Waterways	9.6	346.0	301.2	+15
Buildings:				
Public	45.1	1,461.9	1,025.7	+43
Housg., pub.	5.7	540.3	175.2	+208
Housg., priv.	23.8	1,211.3	2,248.8	−46
Commercial	18.5	431.5	595.2	−28
Industrial	28.1	2,679.9	748.0	+258
Unclassified	35.1	1,197.6	785.5	+52
Total	**$216.9**	**$9,146.0**	**$7,213.5**	**+27**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr. Cost	Aug. '51	542.78	260.91	113.78
Bldg. Cost	Aug. '51	400.07	216.26	113.72
Volume	July '51	665	270	192

deep water or
swamp—

NO PROBLEM FOR MONOTUBE

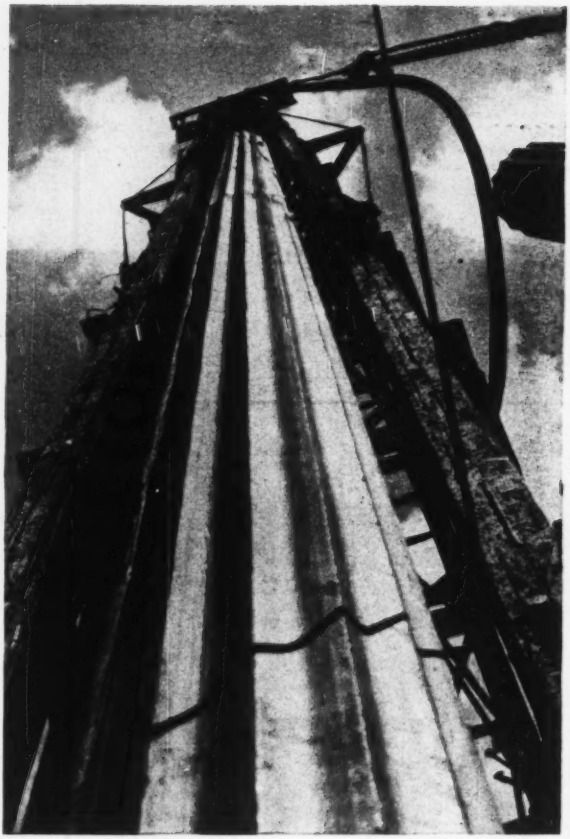
tapered steel piles

BRIDGE foundations often pose tough problems. No exception was the construction of the 900-foot trestle-type bridge across the Tuckahoe River on Maryland State Route 328.

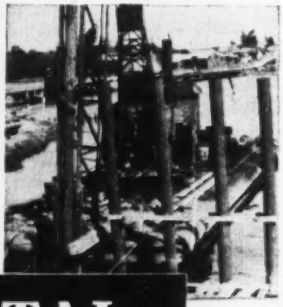
Here, engineers faced a 3-way foundation problem: deep water . . . swamp areas with soft layers of alluvial mud . . . and the need for a full 18-foot clearance above mean tide in the channel area. Careful studies proved Monotube tapered steel piles to be both the ideal *and* the lowest-cost solution to an unusual problem.

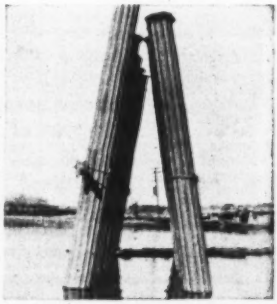
Rugged Monotubes, cold rolled and fluted, offered the extra columnar strength and stability that meant sound construction with a minimum number of piles. Light in weight, easy to handle, and extendible right on the job, Monotubes could be placed and driven *fast* with average driving equipment. Moreover, the wide variety of Monotube diameters made it easy and economical to obtain the required column strength at *any* location . . . deep water or soft mud.

Monotubes come in lengths, gauges, sizes and tapers for varying soil conditions . . . save time and money in all kinds of foundation work. For complete, helpful data, write The Union Metal Manufacturing Company, Canton 5, Ohio.



Looking at 65 feet of Monotube pile straight up from the water. Approximately 10,000 feet of 7 gauge and 3 gauge piles were used for the Tuckahoe River bridge, built for Maryland State Roads Commission by Tidewater Construction Company, under direction of Walter C. Hopkins, Deputy Chief Engineer.





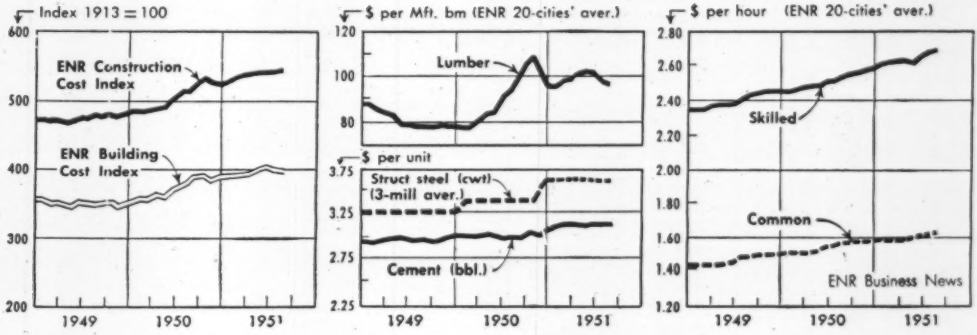
Left: Welding extensions to tapered portion . . . a big time-saving.

Right: Twelve Monotube piles driven for a double bent . . . strong, rigid, good for years.

UNION METAL

Monotube Foundation Piles

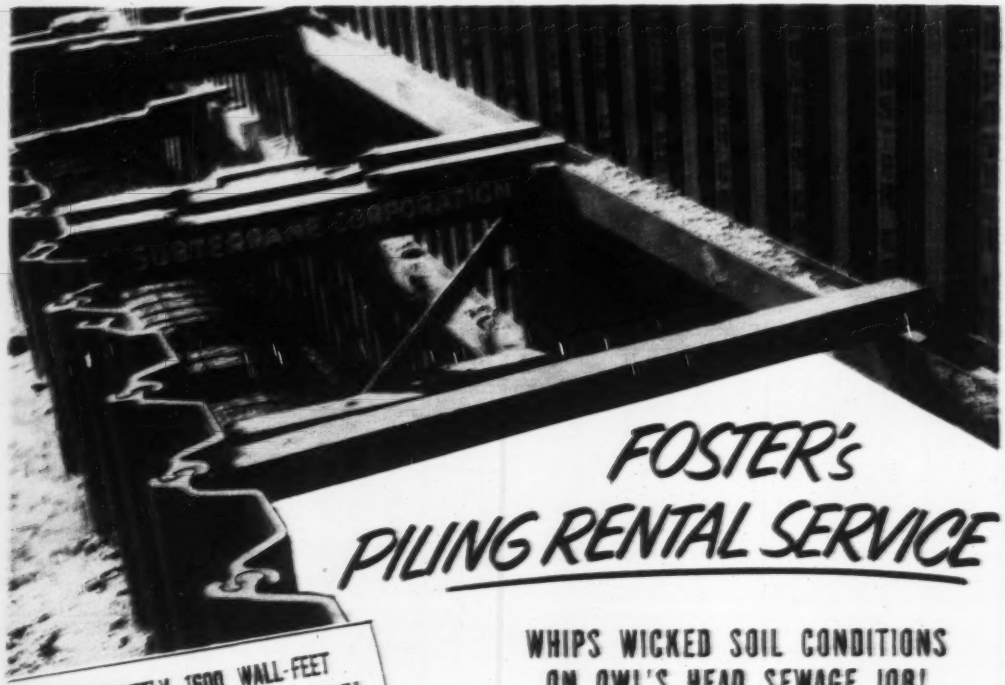
AUGUST CONSTRUCTION SCOREBOARD



ENR INDEXES (1913 = 100)	Aug. '51	July '51	% Change	Aug. '50	% Change
Construction Cost	542.78	542.36	+0.07	521.36	+ 4.1
Building Cost	400.07	400.36	−0.07	383.12	+ 4.4
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	3.163	3.163	0.0	2.971	+21.6
Structural Steel, (3-mill aver.), per cwt	3.650	3.650	0.0	3.400	+ 7.4
Sand, per ton	2.089	2.089	0.0	1.970	+ 6.0
Lumber, 2x4 Fir, per M. ft. bm	105.235	106.250	− 0.9	107.471	− 2.1
Lumber, 2x4 Pine, per M. ft. bm	90.550	91.233	− 0.7	89.387	+ 1.3
Common brick, per M	31.001	31.226	− 0.7	28.775	+ 7.7
Ready-mixed concrete, per c. y	10.885	10.925	− 0.3	10.411	+ 4.5
Structural Clay Tile, 3x12x12 per M	147.598	147.598	0.0	134.033	+10.1
WAGE RATES (20-cities' average)					
Common	1.637	1.629	+ 0.4	1.561	+ 4.8
Skilled (aver. 3 trades)	2.701	2.688	+ 0.4	2.544	+ 6.1
Bricklayers	2.972	2.956	+ 0.5	2.803	+ 6.0
Structural Ironworkers	2.659	2.645	+ 0.5	2.502	+ 6.2
Carpenters	2.473	2.464	+ 0.3	2.328	+ 6.2

CONTRACTS AWARDED (thous.)	July 1951	July 1950	% Change	Seven Months 1951	Seven Months 1950	% Change
Total U. S. (ENR reported)	$1,378,640	$1,175,138	+ 17.3	$8,661,569	$6,840,204	+ 26.6
Private	397,003	699,269	− 43.2	4,587,241	3,933,647	+ 16.6
Public	981,637	475,869	+106.2	4,074,328	2,906,557	+ 40.1
Federal	448,143	115,655	+287.4	1,602,243	831,468	+ 92.7
ENR Constr. Volume Index, '13 = 100	665	589	+ 12.9	579	491	+ 17.9
NEW CONSTRUCTION CAPITAL						
Total	499,413	401,024	+ 24.5	6,410,024	2,993,293	+114.1
State & Municipal Bond Sales	265,174	233,636	+ 35.5	2,083,745	1,697,412	+ 28.5
Corporate Security Sales	234,239	167,388	+ 39.9	1,280,928	1,295,881	− 1.1
Federal (non-federal work)	.....	.....	.....	73,425	.....	.....
Federal (federal work)	.....	.....	.....	2,971,926	.....	.....

MATERIAL SHIPMENTS & LABOR SUPPLY	May (M) June (J) 1951	May (M) June (J) 1950	% Change	Five Months (5) Six Months (6) 1951	Five Months (5) Six Months (6) 1950	% Change
Cement, thous. bbls., Bu. of Mines	24,894(M)	22,834(M)	+ 9.0	87,070(5)	75,383(5)	+15.5
Fabr. Struc. Steel, thous. tons, AISC	257(J)	202(J)	+27.2	1,371(6)	1,075(6)	+27.5
Lumber, mil. ft. bm., NLMA	3,474(M)	3,683(M)	− 5.6	16,459(5)	15,743(5)	+ 4.5
Lumber Prod., mil. ft. bm., NLMA	3,793(M)	3,576(M)	+ 6.1	16,318(5)	14,744(5)	+10.6
Contract Constr. Employ., thous. BLS	2,674(J)	2,414(J)	+10.7	(Av.) 2,423(6)	(Av.) 2,070(6)	+17.0



FOSTER'S PILING RENTAL SERVICE

APPROXIMATELY 1600 WALL-FEET OF FOSTER RENTAL PILING—ON TIME!

This steel sheet piling (AP-4 Sections) was used in conjunction with the construction of a monolithic concrete sewer which runs along the seawall in the Bay Ridge area of Brooklyn, parallel to the Belt Parkway. It was used as a retaining wall while the concrete sewer was poured into place. This rental piling—delivered on time, with the usual prompt and dependable Foster service—prevented water from seeping into the sewer trench, and protected work and personnel against possible landslides.

WHIPS WICKED SOIL CONDITIONS ON OWL'S HEAD SEWAGE JOB!

The Subterrane Corporation, constructing the new $20,000,000 Owl's Head Sewage Treatment Works Intercepting Sewers Project at South Branch, Brooklyn, encountered rougher than usual soil conditions. A disruptive seepage problem existed which made the use of steel sheet piling essential. In response to an emergency order from Mr. R. B. Murdock, President of The Subterrane Corporation, and an urgent request from Frederick H. Zurmuhlen, Commissioner of New York City Department of Public Works, the L. B. Foster Company rushed RENTAL STEEL SHEET PILING (*AP-4 Sections*) to the site of the troublesome leakage in time to prevent heavy losses from work interruption.

Foster's Piling Rental Service solves those "sudden emergencies"—gives you a "*Head-Start*" *that means* "*Headway*" by shipping immediately the exact lengths and exact sections of piling your job demands.

SEND FOR FREE PILING WALL CHART # EP-5

L. B. FOSTER CO.

RAILS • TRACK ACCESSORIES • PIPE • WIRE ROPE • RENTAL PILE HAMMERS & EXTRACTORS

PITTSBURGH 30, PA. *CHICAGO 4, ILL.*
NEW YORK 7, N.Y. *HOUSTON 2, TEX.*

It's a game

THE MYSTERY of what is secret and why—as well as when a secret ceases to be a secret—continues to crop up in Washington. Since last March this journal has been sitting on the information that U. S. contractors were enlarging World War II airbases in Greenland. It's been a secret, and we keep a lot of them in the claimed interest of national security. But last week newspaper accounts mentioned Greenland, and later were further expanded to include the fact that the runways at Narsarssuak in the Julianchaab area are being lengthened. It was a secret three months ago. Now it can be told. We admit to being puzzled.

Now the newspapers are reporting that airbases are being built in North Africa and Turkey. It is not permissible yet to say where, but it would be surprising if the Soviets didn't know.

The point of this plaint is that people in Washington, in engineers' and contractors' offices, and in industrial companies furnishing materials and equipment, are using up a lot of valuable energy keeping secrets that can't be kept—or that are intended to be kept for only a short time. During the last war the construction of an airbase near West Point, N. Y. was under strict secrecy orders during the entire construction period. On the day it was completed—and a worthwhile bombing target for the first time—a gala opening was staged. Publicity was not only permitted—but sought.

So, we wonder if a lot of so-called secrecy is not unnecessary. Keeping things secret makes an interesting game, but it also wastes a lot of energy that could be directed to more useful purposes.

Highway overloads penalized

NINE STATES have stepped up the penalties placed on violators of restrictions on truck weights on their highways, according to a check just made by the National Highway Users Conference. This action appears to be an outcome of the Maryland Road Test, made last year under the auspices of the Highway Research Board, to determine the effect of various truck axle loadings in excess of the 18,000-lb limit commonly used by state highway departments. Although full details of the tests have not been published, the damage done by loads considerably in excess of that limit was obvious to anyone viewing the test pavement.

Meanwhile the propaganda put out by the trucking interests to offset the effect of the Maryland Road Test has taken an amusing turn. In May, the magazine FLEET OWNER published an article entitled, "What Concrete Road Builders Don't Know About Road Building . . . McAdam Did." It purports to show that 125 years ago the Scotch road builder for whom macadam pavements were named knew better than to build pavements on soil such as underlies the test road in Maryland. According to that article, it was not the loads but the lack of adequate foundation that resulted in the widely publicized damage to the pavement.

About the same time the Pennsylvania Motor Truck Association issued a pamphlet entitled, "Pounded to Pieces?", that title having been picked from widely circulated newspaper reports on the test pavement. This brochure undertakes to show by picture and text that the test pavement in Maryland actually had not been injured by any of the test loads, that except for a few more cracks the pavement is just as good today as it was before the test began.

All this probably will cause the research staff of the Highway Research Board such concern as true scientists always express when conclusions are drawn before all details of their tests have been published. But the end result is good. The drive for relaxation of highway load restrictions has been definitely checked.

Seaway blocked again

CONGRESS will take no action on the St. Lawrence seaway and power project at this session. Washington observers are convinced of that in view of the bitter fight at hearings before the Public Works Committee of the House.

Were it not for the growing shortage of power in Ontario, this failure by Congress to act would not be of serious concern to anyone except possibly the Hanna-Hollinger interests that are developing iron-ore deposits in Quebec and Labrador. These developers need a modernized canal along the St. Lawrence, it is said, through which large ore boats must operate if ore from Labrador is to be able to compete with ore from Michigan and western Ontario.

But now there are reports from reliable sources that the Hanna interests have developed other and equally cheap methods for getting the ore to the Cleveland-Pittsburgh district. What the arrangements are is not said, but an overland belt-conveyor system from Montreal up to Lake Ontario is not beyond the realm of possibility.

Of course there is no physical reason why development of power in the International Rapids section of the river could not go forward without the ship canal. Hence, in view of the power situation, there is much to be said in favor of a new start in the form of applications from the New York State Power Authority and the Hydro Electric Power Commission of Ontario to the International Joint Commission for authority to proceed with the power development. If provision for future construction of locks is made at the time the power dam or dams are built, little would be lost.

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This steel sheet piling (AP-8 Sections) was used in conjunction with the construction of a monolithic concrete sewer which runs along the seawall in the Bay Ridge area of Brooklyn, parallel to the Belt Parkway. It was used as a retaining wall while the concrete sewer was poured into place. This rental piling—delivered on time, with the usual prompt and dependable Foster service—prevented water from seeping into the sewer trench, and protected work and personnel against possible landslides.

WHIPS WICKED SOIL CONDITIONS ON OWL'S HEAD SEWAGE JOB!

The Subterrane Corporation, constructing the new $20,000,000 Owl's Head Sewage Treatment Works Intercepting Sewers Project at South Branch, Brooklyn, encountered rougher than usual soil conditions. A disruptive seepage problem existed which made the use of steel sheet piling essential. In response to an emergency order from Mr. R. B. Murdock, President of The Subterrane Corporation, and an urgent request from Frederick H. Zurmuhlen, Commissioner of New York City Department of Public Works, the L. B. Foster Company rushed RENTAL STEEL SHEET PILING *(AP-8 Sections)* to the site of the troublesome leakage in time to prevent heavy losses from work interruption.

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It's a game

THE MYSTERY of what is secret and why—as well as when a secret ceases to be a secret—continues to crop up in Washington. Since last March this journal has been sitting on the information that U. S. contractors were enlarging World War II airbases in Greenland. It's been a secret, and we keep a lot of them in the claimed interest of national security. But last week newspaper accounts mentioned Greenland, and later were further expanded to include the fact that the runways at Narsarssuak in the Julianehaab area are being lengthened. It was a secret three months ago. Now it can be told. We admit to being puzzled.

Now the newspapers are reporting that airbases are being built in North Africa and Turkey. It is not permissible yet to say where, but it would be surprising if the Soviets didn't know.

The point of this plaint is that people in Washington, in engineers' and contractors' offices, and in industrial companies furnishing materials and equipment, are using up a lot of valuable energy keeping secrets that can't be kept—or that are intended to be kept for only a short time. During the last war the construction of an airbase near West Point, N. Y. was under strict secrecy orders during the entire construction period. On the day it was completed—and a worthwhile bombing target for the first time—a gala opening was staged. Publicity was not only permitted—but sought.

So, we wonder if a lot of so-called secrecy is not unnecessary. Keeping things secret makes an interesting game, but it also wastes a lot of energy that could be directed to more useful purposes.

Highway overloads penalized

NINE STATES have stepped up the penalties placed on violators of restrictions on truck weights on their highways, according to a check just made by the National Highway Users Conference. This action appears to be an outcome of the Maryland Road Test, made last year under the auspices of the Highway Research Board, to determine the effect of various truck axle loadings in excess of the 18,000-lb limit commonly used by state highway departments. Although full details of the tests have not been published, the damage done by loads considerably in excess of that limit was obvious to anyone viewing the test pavement.

Meanwhile the propaganda put out by the trucking interests to offset the effect of the Maryland Road Test has taken an amusing turn. In May, the magazine FLEET OWNER published an article entitled, "What Concrete Road Builders Don't Know About Road Building . . . McAdam Did." It purports to show that 125 years ago the Scotch road builder for whom macadam pavements were named knew better than to build pavements on soil such as underlies the test road in Maryland. According to that article, it was not the loads but the lack of adequate foundation that resulted in the widely publicized damage to the pavement.

About the same time the Pennsylvania Motor Truck Association issued a pamphlet entitled, "Pounded to Pieces?", that title having been picked from widely circulated newspaper reports on the test pavement. This brochure undertakes to show by picture and text that the test pavement in Maryland actually had not been injured by any of the test loads, that except for a few more cracks the pavement is just as good today as it was before the test began.

All this probably will cause the research staff of the Highway Research Board such concern as true scientists always express when conclusions are drawn before all details of their tests have been published. But the end result is good. The drive for relaxation of highway load restrictions has been definitely checked.

Seaway blocked again

CONGRESS will take no action on the St. Lawrence seaway and power project at this session. Washington observers are convinced of that in view of the bitter fight at hearings before the Public Works Committee of the House.

Were it not for the growing shortage of power in Ontario, this failure by Congress to act would not be of serious concern to anyone except possibly the Hanna-Hollinger interests that are developing iron-ore deposits in Quebec and Labrador. These developers need a modernized canal along the St. Lawrence, it is said, through which large ore boats must operate if ore from Labrador is to be able to compete with ore from Michigan and western Ontario.

But now there are reports from reliable sources that the Hanna interests have developed other and equally cheap methods for getting the ore to the Cleveland-Pittsburgh district. What the arrangements are is not said, but an overland belt-conveyor system from Montreal up to Lake Ontario is not beyond the realm of possibility.

Of course there is no physical reason why development of power in the International Rapids section of the river could not go forward without the ship canal. Hence, in view of the power situation, there is much to be said in favor of a new start in the form of applications from the New York State Power Authority and the Hydro Electric Power Commission of Ontario to the International Joint Commission for authority to proceed with the power development. If provision for future construction of locks is made at the time the power dam or dams are built, little would be lost.

The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

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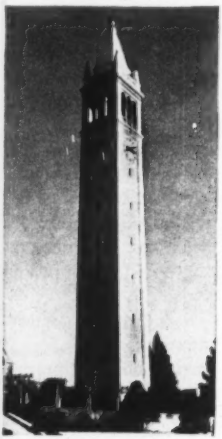
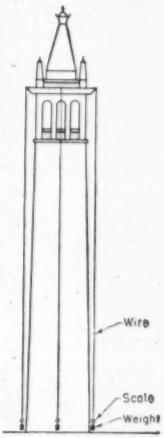
Transits Measure Tower Movements

As part of an investigation into the cause of cracking in the granite face of Sather Tower, heart of the University of California Berkeley campus, Ned P. Clyde (Consulting Engineer) and Milos Polivka (Asst. Prof. of Civil Engineering at the University) have successfully measured the tower's movements due to temperature changes, with the aid of four transits and Nilvar wires.

Lateral movement was determined by placing rigidly-braced, well-insulated and shaded targets at the center of each of the four faces on a balcony 228 ft. above ground and reading them with transits at base of tower. The transits were fitted with prisms which deflected the line of sight by 90 deg. and permitted observations on the scales with telescope in horizontal position. The targets were so oriented that observations could be made in both north-south and east-west directions.

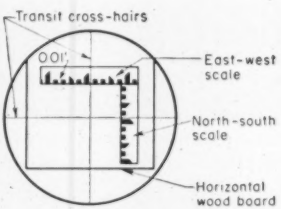
Vertical movement was determined by observing markers attached to Nilvar wires suspended from the parapet wall at 224 ft. As the sun reached the tower, lateral movement (*e.g.*, 0.82 in. at 78 deg. air temp.) was in a direction away from the sun. However, vertical movement was slight (max.: 0.12 in. at 85 deg.).





Sather Tower *has steel frame fireproofed with concrete. Concrete walls have six-in. granite ashlar facing; granite masonry trim. Vertical movement was measured by markers on Nilvar wires.*

Adapted from an article in *Civil Engineering* for May 1961 by Clyde and Polivka.



Instruments *at tower base (left): Gurley Transit, Nilvar wire and scale, and potentiometer for measuring facing's temperature.* **Lateral movement** *was determined by observing the position of cross hairs of specially-equipped Gurley Transit on two mutually-perpendicular horizontal scales of target.*

Write for Bulletin 50 giving complete details on Gurley transits, levels and other engineering instruments. And enclose a surveying tip for this page.

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ENGINEERING NEWS-RECORD

AUGUST 9, 1951 VOL. 147 NO. 6

All construction put under federal control machinery

National Production Authority spells out more detailed regulations to conserve controlled materials—Future starts require authorization and CMP allotment

Construction projects of every size and description must operate under the Controlled Materials Plan from now on. The National Production Authority last week put out new orders, regulations and directions that make controls mandatory for all jobs, no matter how small.

True, there is a loophole that makes compliance easier for the very small jobs: Projects that use less of the controlled materials than the ceiling limits shown in Table I can act as self-authorizers and self-certifiers both for starting construction and for placing CMP orders for controlled materials and DO priority orders for other products, if necessary.

But even the small jobs are bound by a new conservation order prohibiting use of (1) Site-fabricated aluminum for any purpose except on the small industrial projects and (2) of job-fabricated copper for nearly all of its common purposes except water piping. Application for an exception must be submitted and approved before copper or aluminum can be used in any of these forbidden ways, even if the contractor already has the material in stock.

Outside of these prohibitions, however, a builder can go ahead and use controlled materials already stocked for his job. He has to apply only for requirements—in excess of the ceiling limits—for which he seeks delivery in the fourth quarter or in later quarters.

• **Replacement**—NPA made a clean sweep of all former construction regulations and orders, replacing them with a new set. Note that no builder may continue construction "already commenced, or commence construction" unless he has received an authorized construction schedule and an allotment of controlled materials—except where otherwise specifically provided by NPA.

Here is what NPA did:

It revoked its basic construction order, M-4, replacing it with a new Regulation M-4A that tightens controls over larger building projects but removes the necessity of applications (to NPA) for permission to begin construction or to get allotments of materials for buildings or projects using relatively small amounts of steel, copper and aluminum.

Under M-4A generally, no person may begin any type of construction that requires the use of more than two tons of carbon steel, 200 lb. of copper, or any quantity of aluminum, alloy steel or stainless steel without authorization and allotment of materials.

Thus, all construction goes under NPA's Controlled Materials Plan beginning with the fourth quarter of 1951. (Previously, construction came under CMP only on a permissive basis: Owners and builders could elect to obtain construction materials under CMP procedures but were not required to do so.)

• **Where to go**—Applications must be made to the appropriate government agency (see Table II) for permission to build and for an allotment of controlled materials, as provided for in NPCMP regulations, for all construction projects using more than the minimum amounts of controlled materials for which self-authorization is allowed in the new regulations.

Other accompanying actions were:

1. Amendment of CMP Regulation 6, (the CMP construction regulation.)

2. Issuance of Direction 1 to CMP 6, providing for allotments of controlled materials for construction and for self-authorization of minimum amounts of such materials for certain

(*Continued on page 24*)

TABLE I

TYPES OF CONSTRUCTION AND QUANTITIES OF CONTROLLED MATERIALS FOR WHICH THE SELF-AUTHORIZATION PROCEDURE MAY BE USED (IN POUNDS)

Type of Construction	Carbon Steel (excluding structural)	Structural Steel	Alloy Steel & Stainless	Copper and Copper-based Alloys	Aluminum
#1	1*	1*	1*	2000	1000
#2	1800	----	----	35	----
#3	1450	----	----	160	----
#4	3500	----	----	65	----
#5	2750	----	----	300	----
#6	5100	----	----	100	----
#7	4100	----	----	450	----
#8	6550	----	----	125	----
#9	5200	----	----	575	----
#10	3*	3*	----	200	----
#11	----	----	----	----	----

#1. Industrial plants, factories or facilities, per project, per calendar quarter
#2. Residential structures (using steel pipe for water distribution systems) containing one dwelling unit, per structure (2*)
#3. Residential structures (using copper pipe water distribution systems) containing one dwelling unit, per structure (2*)
#4. Residential structures (using steel pipe water distribution systems) containing two dwelling units, per structure (2*)
#5. Residential structures (using copper pipe water distribution systems) containing two dwelling units, per structure (2*)
#6. Residential structures (using steel pipe water distribution systems) containing three dwelling units, per structure (2*)
#7. Residential structures (using copper pipe water distribution systems) containing three dwelling units, per structure (2*)
#8. Residential structures (using steel pipe water distribution systems) containing four dwelling units, per structure (2*)
#9. Residential structures (using copper pipe water distribution systems) containing four dwelling units, per structure (2*)
#10. All other types of buildings, structures, or projects, except those listed in Table I of NPA Order M-4A and multi-unit residential structures, per project, per calendar quarter
#11. Buildings, structures, or projects of the types listed in Table I of NPA Order M-4A

Explanation of footnotes(*):

1*. 25 tons of carbon and alloy steel, including structural (not to include more than 2½ tons of alloy steel and no stainless)
2*. Only one-half the quantities permitted under the self-authorization procedure may be used for an addition, extension or alteration to or of an existing residential structure other than a multi-unit residential structure
3*. Two tons of carbon steel, including structural

All construction under controls . . .

(*Continued from page 23*)

categories of construction.

3. Amendment to Delegation 14, NPA's delegation to other government agencies to process construction applications on categories of construction in their jurisdiction to the new regulations.

4. Revocation of Delegation 7. This delegation was to 57 Department of Commerce field offices to process certain construction applications; under the new regulations all construction applications will be processed for the time being in Washington.

5. Amendment to order M-74, which restricts the use of copper in the manufacture of certain items of material for construction. This amendment adds six items to the restricted list.

6. Form NPAF24-A issued for use in applying under terms of M-4A for exception or adjustment from provisions of the order on prohibited construction cases and in cases involving the prohibited use of copper or aluminum.

• **Authorized schedule**—Order M-4A specifically prohibits the start of construction of all types of buildings, structures or projects that require the use of more than specified quantities of controlled materials, unless the prime contractor receives an authorized construction schedule and a related allotment of materials under terms of CMP 6. He is permitted to self-authorize his orders for less than the specified amounts of these materials, as in Direction 1 of CMP 6.

The new order retains prohibitions on certain uses of copper and aluminum, forbidding use of copper and aluminum in construction for decorative or ornamental purposes, or use of any copper controlled materials to be fabricated, adapted or fitted for any of 17 purposes, including cornices, down spouts, gutters and accessories, roofing, most iron pipe sizes and fittings, tube and tube fittings.

Also forbidden is the use of any aluminum, other than Class B products, for any purposes other than industrial construction.

The "List A" of prohibited construction of M-4 is transferred intact to M-4A. This list of 47 types of structures, buildings and projects for entertainment, recreation or amusement appears in Table I.

Order M-4A provides that for all other types of construction (except those listed in Table I) no person may begin construction after Sept. 30 on any building, structure or project unless he has received an authorized construction schedule and related allotments under provisions of CMP 6, or unless he can complete the proposed construction with the quantities of controlled materials that he may obtain by self-authorization under provisions of Direction 1 to CMP Reg. 6.

• **No big starts**—Between now and the beginning of the fourth quarter, no construction may be started if it will use more than the specified amounts of controlled materials stated in Direction 1 to CMP Reg. 6.

No priority assistance for materials will be made available for any such construction for delivery before Oct. 1.

TABLE II
WHERE TO APPLY FOR CONSTRUCTION MATERIALS
AGENCIES TO WHICH OWNERS AND CONTRACTORS SHOULD DIRECT CMP-4C APPLICATIONS AND ALL QUESTIONS REGARDING NPA ORDER M-4A

Category of construction	Agency	Address where communications shall be filed
All school and library construction; all hospital and health facility construction other than the Veterans Administration and military hospitals; all other health and sanitation programs (but not water-supply and sewer-construction programs), except such types of construction on federally-owned property under the control of the Atomic Energy Commission and such types of construction on military reservations; college housing.	Federal Security Agency	Schools and libraries: Office of Education, Federal Security Agency, Washington 25, D. C. Hospitals and health projects: Public Health Service, Federal Security Agency, Washington 25, D. C.
The hospital program of the Veterans Administration.	Veterans Administration	Assistant Administrator for Construction, Veterans Administration, Washington 25, D. C.
Housing construction, alteration, and repair, except: housing and community facilities on federally-owned property under the control of the Atomic Energy Commission; housing on military reservations; military housing under the Wherry Act; college housing; and farmstead construction.	Housing and Home Finance Agency	Public housing: Public Housing Administration field offices Private housing: Federal Housing Administration field offices
Facilities for departmental programs of the Department of the Interior.	Dept. of the Interior	Department of the Interior, Washington 25, D. C.
Facilities for the production, preparation, and processing of solid fuels.	Dept. of the Interior	Defense Solid Fuels Administration, Department of the Interior, Washington 25, D. C.
Facilities for the production and processing of metals and minerals (except solid fuels, oil, and gas).	Dept. of the Interior	Defense Minerals Administration, Department of Interior, Washington 25, D. C.
Facilities for the production and processing of fishery products.	Dept. of the Interior	Defense Fisheries Administration, Department of the Interior, Washington 25, D. C.
Facilities for the generation, transmission, and distribution of electric power.	See NPA Oder M-50	Defense Electric Power Administration, Department of the Interior, Washington 25, D. C.
Facilities for the production, processing, refining, and distribution of petroleum and gas, and facilities for the production, processing, and distribution of the products listed in Appendix A of NPA Delegation 9 (but not filling stations).	See NPA Order M-46B	Petroleum Administration for Defense, Department of the Interior, Washington 25, D. C.
Bureau of Public Roads Programs for highway construction, bridges, tunnels and maintenance.	Dept. of Commerce	Bureau of Public Roads, District Engineer, field offices

Nor will priority assistance be made available before that date to acquire products or materials, or to make inventory replacements, or to acquire production machinery or equipment.

This means that the self-authorization provisions of the regulations do not go into effect until the beginning of the fourth quarter, Oct. 1. Until that time a person may start construction on a project using up to the minimum amounts of controlled materials listed, but he must obtain his materials without priorities assistance from any government agency.

M-4A explains that the methods of acquiring an authorized construction schedule and the related allotments are set forth in CMP Reg. 6, which provides for submitting Form CMP-4C.

It explains that Direction 1 to CMP Reg. 6 provides for self-authorization by a prime contractor of his orders for certain specified quantities of controlled materials.

M-4A makes provision for persons affected by copper restriction provisions of the order, or those restrictions on the items in Table I to make application for adjustment or exception. This application may be made on the ground that the provision in question works an undue hardship upon the person involved or that its enforcement against him would not be in the interest of national defense or in the public interest.

• **Criterion**—In considering requests for adjustment or exception, NPA will be guided by requirements of public health and safety, civilian defense, and dislocation of labor and resulting unemployment that would impair the defense program.

The order directs that applications for adjustment or exception must be made by filing both form NPAF24A, and Form CMP-4C. These forms are filed with NPA in Washington.

In determining whether an adjustment or exception should be granted in these cases, the processing agency will consider whether the applicant has, in his inventory, as provided in CMP Reg. 2, controlled materials in sufficient quantity to complete the proposed project.

Requests for adjustment or exception to the copper limitation provisions of M-4A must also be made by filing form NPA24A with NPA in Washington.

• **Exemptions**—Three types of construction are exempt from general provisions of M-4A, since they are subject to provisions of special NPA orders:

Construction of electric power generating facilities, subject to NPA order M-50; construction of facilities for the production, processing, refining and distribution of petroleum and gas, subject to NPA order M-45B; and operating construction in connection with communications facilities, subject to NPA order M-77.

"Commence construction" as redefined in M-4A eliminates the previous inclusion of "site clearance" as constituting commencement of construction as defined in M-4.

The order points out that "authorized construction schedule" is defined in Section 2 (FG) of CMP Reg. 6. This definition follows:

"Authorized construction schedule means a construction schedule specifically approved by a claimant agency or by an industry division with respect

(*Continued on page 26*)

AND FOR AN ALLOTMENT OF CONTROLLED MATERIALS

Category of construction	Agency	Address where communications shall be filed
Air navigation facilities; civil airports.	Dept. of Commerce	Civil Aeronautic Administration, Attention: W-30, Washington 25, D. C.
Shipyards.	Dept. of Commerce	Maritime Administration, Washington 25, D. C.
Facilities for domestic transportation, storage, and port facilities.	Defense Transport Administration	Defense Transport Administration, Washington 25, D. C.
Construction by, or for the account of, the Department of Defense and all military housing under the Wherry Act. Navy construction; Army construction; Air Force construction, including, but not limited to, projects of an industrial nature financed by the Air Force; military command construction.	Dept. of Defense	Local representative of the military department concerned (do not file Form CMP-4C unless it is requested)
All construction by, or for the account of the Atomic Energy Commission; industrial construction sponsored by the Atomic Energy Commission.	Atomic Energy Commission	Appropriate operations office of the Atomic Energy Commission (do not file Form CMP-4C unless it is requested)
All construction by, or for the account of, the National Advisory Committee for Aeronautics.	National Advisory Committee for Aeronautics	National Advisory Committee for Aeronautics, Washington 25, D. C.
Federal buildings and facilities except as otherwise designated in this table.	General Services Administration	Controlled Materials Division, General Services Administration, Room G-125, GSA Building, 18th and F Streets, NW., Washington 25, D. C.
Farm construction, including farmstead construction; food production and processing facilities, and wholesale food distribution facilities within the limits of the memorandum of agreement between the administrator of the Production and Marketing Administration and the administrator of the National Production Authority, as from time to time amended or supplemented.	Department of Agriculture	State offices, Production & Marketing Admin., Department of Agriculture
Operation construction in connection with communications facilities.	National Production Authority. See NPA Order M-77	Communications Division, National Production Authority, Washington 25, D. C.
All other construction not specifically listed above (including all categories of construction in Table I—prohibited types—of NPA Order M-4A and all other categories, such as commercial building).	National Production Authority	Construction Controls Division, National Production Authority, Washington 25, D. C.

Under controls . . .

(Continued from page 25)

to a prime contractor, or specifically approved by a prime contractor or a subcontractor with respect to a subcontractor."

The amendment to CMP Reg. 6 provides that, except where specifically provided otherwise by NPA, no person may continue construction already started or commence construction unless he has received an authorized construction schedule and related allotment of controlled materials.

The regulation says that these may be authorized on the basis of information furnished by applicants on CMP Form 4C and directs prime contractors to furnish these data to the appropriate claimant agency or industry division.

• **Only as authorized**—The regulation further states that no owner or prime contractor who has received an authorized construction schedule may obtain any material or product needed for its completion except by use of the related allotment symbol or DO rating. This means that purchase of material over and above the amounts specifically authorized is prohibited.

Direction 1 to CMP Reg. 6 establishes the procedure whereby persons may place authorized controlled material orders and defense rated (DO) orders for construction materials (calling for delivery after Sept. 30) for projects where the total requirements do not exceed specified quantities.

The types of construction and the quantities of controlled materials for which the self-authorization procedure may be used also are listed in Table I.

• **For housing**—There is no provision for self-authorization for multi-unit residential (apartment house) construction or for Table I construction in M-4A.

Direction 1 to CMP Reg. 6 provides that after Sept. 30 a prime contractor may continue construction that has been started or commence construction of multi-unit residential structures (apartment houses) only by getting authorization after submitting form CMP-4C to the appropriate field office of the Housing and Home Finance Agency.

Prior to that date he may continue or start such a project without authorization, if his total requirements for controlled materials, including Class A products, do not exceed the following amounts: Carbon steel, 25 tons; aluminum, alloy steel and stainless steel, none; copper and copper-base alloys, 2,000 lb.

If such a project will require more than these amounts of materials and if it will be started before Oct. 1., applications may be made to HHFA.

For construction of projects other than those in Table I, or multi-unit residential structures, Prior to Oct. 1, construction may start, provided the materials used do not exceed the amounts allowed for self-authorization in Schedule I.

• **How to continue**—Prior to Oct. 1., a prime contractor may continue construction already started on projects of this type by these methods:

(1) Without submitting an application if his total requirements after Sept. 30 of each kind of controlled material for completing such a project, including material for Class A products, do not exceed the amounts in Schedule I, or

(2) By submitting an application on Form CMP-4C for authorization to continue construction after Sept. 30, and an allotment of controlled material, if his total requirements after Sept. 30 of any kind of controlled material for completion of the project, including materials for Class A products, exceed the amounts specified in Schedule A.

The method of using the self authorization procedure for controlled materials up to the amounts provided for calls for the use of the following allotment symbols:

U-6 for industrial plants, factories or facilities.

U-7 for residential structures other than multi-unit ones.

U-8 for all other types of projects except Table I and multi-unit residental.

For self-authorizing orders for delivery of products or materials other than controlled materials, the rating DO with the appropriate allotment symbol may be used by persons authorized to use the procedure with controlled materials.

However, DO ratings may not be used to procure either any construction machinery (as defined in NPA order M-43), or metal working machines (as defined in NPA M-41).

See rollback out under new price law

Chances for a $1-billion net rollback in cost of building materials went out the window last week with enactment of the new controls law (see p. 23). Washington observers now make a horseback estimate that building materials will go up an average of 6 to 10% in price.

If those increases come, they will come slowly for most lines, the building products manufacturers say. Construction cutbacks and shortages of structural shapes, steel plate, copper and aluminum are putting such a crimp in the building supply market, these people point out, that most materials are going to be in oversupply for months ahead. As a result, they foresee producers and dealers fighting for sales and slashing prices—or at least holding them to present levels—in energetic competition for business.

No such delaying effect will be felt in the construction machinery market. As soon as the Office of Price Stabilization gets out a new regulation and application form to effectuate the price provisions of last week's law, the construction equipment manufacturers will be able to apply for price changes. (Meanwhile they must apply by Aug. 13 on the old OPS Form 8, along with all other manufacturers covered by CPR 22 and CPR 30.)

• **Price increases**—With demand running ahead of supply in the construction machinery market, the equipment manufacturers won't have to hesitate about adding on any price increases allowed under the new law. For many machines, higher prices may be expected to go into effect this fall.

Price Director Michael V. DiSalle told the House Banking Committee in June that OPS had estimated a net $1-billion rollback in annual cost of building materials under CPR 22, provided Congress continued the old price provisions in the new law. With the Capehart Amendment that Congress enacted in the new law, the materials manufacturers undoubtedly will apply for higher price ceilings where they can. Because of the market situation, many of the increases won't show up in selling prices for some months to come.

• **Plenty of punch**—Overall, last week's revision of the controls law can be summed up as a milder version of the Defense Production Act of 1950. But it still packs plenty of authority.

Controls over materials and production remain virtually unchanged.

Rollbacks from current price levels are just about out.

Consumer credit and rent controls are relaxed.

Congress wrote in a basketful of other restrictive amendments of its own—but ignored the big chunks of additional authority President Truman asked.

The biggest change affected price controls. Under the so-called cost-plus amendment, manufacturers must still continue to price according to OPS orders. But they can ask for, and get, relief which gives them a price equal to (A) Highest price between Jan.-June 1950 plus (B) all cost increases up to July 26.

Vital access roads get defense help

The U. S. Bureau of Public Roads has received certification from the Defense Minerals Administration for eleven access roads to move strategic ores from remote mines.

Work on one access road already has been completed, two others are under construction, and one is programmed. Construction of the remaining seven can get under way when the 1952 fiscal year appropriation bills are enacted. The roads are built under authority of the Federal-Aid Highway Act of 1950.

Access roads so far certified range in cost from $15,000 to nearly $2.5 million. Applications have been received for 69 projects ranging in length from one-quarter mile to 46 miles (not counting two requests by the Atomic Energy Commission for networks of roads). The average length is 14.2 miles.

In each DMA field study, a Bureau of Mines and Geological Survey team examines the property to determine whether the potential production would justify the public expense.

If this examination proves favorable, the BPR district engineer makes an investigation and prepares a cost estimate of the highway facilities required. When both the field team and the BPR engineer have reported, DMA either certifies the project or denies it. For a certified project, contract plans for the necessary improvements are then developed and the project is placed under construction.

None of these projects could be built by use of federal-aid, state, county or other regular road funds.

Ariz. approves $25-million highway budget for 1951-52

A $25,275,000 highway budget for 1951-52 has been approved for Arizona. The budget total includes $12,000,000 in revenue anticipated during the year from federal aid and state gasoline taxes, plus a carryover from last year of approximately $13,000,000.

Of this, $21,356,000 will be spent on state highway system improvements including $14,183,000 on primary routes, $4,738,000 on secondary routes, and $2,435,000 on urban.

Counties will have a $3,919,000 construction program on primary systems, including $1,225,000 of their own funds and $2,693,000 of federal aid.

In drawing up its budget, Arizona restricted work to projects the state believes it can justify to the federal government in light of strategic needs of national defense.

To be pushed in 1951-52 are beeline cross-state routes. The Black Canyon highway, north-south route between Phoenix and Prescott was alloted $2,432,000. A $1,232,000 appropriation was made for a 40-mi leg between Prescott and Cordes Junction and a $1,200,000 allocation for 15 mi. of the Verde Valley leg.

Other principal allocations include $676,000 for completion of the 1,200-ft Queen Creek tunnel on U. S. 60-70 between Superior and Miami. Work calls for lining, paving, lighting, and ventilating.

The Topok-Kingman section of U.S. 66 will be completed and oil surfaced at a cost of $1,298,000; and $400,000 is set up for straightening Ash Fork over a 17-mi. sector of U. S. 66.

Double confirmation seen for General Chorpening

Brig. Gen. Claude H. Chorpening will soon get double-barreled confirmation—as assistant to the Chief of Engineers and as a permanent brigadier general in the regular Army of the U. S. President Truman sent the two-part nomination to the Senate July 23.

Two assistants to the Chief of Engineers are authorized by law. Brig. Gen. George J. Nold will be the senior assistant to the chief; his appointment was made Dec. 1, 1949. Chorpening will continue as head of the Civil Works Division. He has been in charge of that division since Feb. 19.

Carl W. Brown dismissed as Missouri highway head

Carl W. Brown, chief engineer of the Missouri Highway Department, was dismissed by the State Highway Commission on July 23. Rex M. Whitton, head of the department's division of maintenance, was named chief engineer in Brown's place.

In advising Mr. Brown of its action, the commisison said: "While it has been obvious to the commission that administrative changes have been necessary and that new leadership must eventually be obtained for the department, recent events have caused the commission to take immediate action."

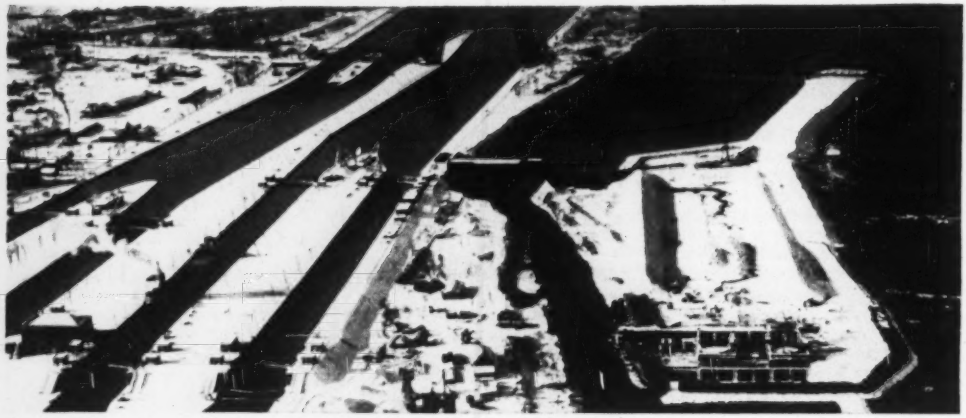
A few days previously Mr. Brown had told the Governor's Road Study Committee that he had been informed by a reliable source that he was to be removed from his position as chief engineer of the department.

Replying to a charge that he had lost his administrative control, Mr. Brown said, "Perhaps there is some truth in that charge, but if so, it can be attributed to the fact that it was being deliberately undermined by those seeking to have me removed.

"Pertinent facts concerning the operation of the department were withheld from me. Verbal orders from the chairman were given my subordinates through the commission's secretary. How could I be expected to retain my administrative control when I was bypassed as to what was going on in a department of which I was head?"

Mr. Brown, who is 64, has been chief engineer of the department since 1936 and has been with the department for 33 years.

IT WORKS—On June 22, 1950, ENR carried a story on a lift bridge designed to vault over floods. On July 12, 1951, it did. The above photo shows the 232-ft, through-girder railroad structure raised to clear waters of swollen Blue River in Kansas City, Mo. In its lowered position, the sagging simple span (design deflection: 13 in.) rests on piers, submerged here but normally high and dry, to become a three-span continuous structure capable of carrying Cooper E 60 loading. Howard, Needles Tammen & Bergendoff designed the crossing for Sheffield Steel Co., whose buildings it services.



STRATEGIC SOO—Parallel dikes for power plant headgate at right are paved with machines that contractor had to invent. At left: the locks that pass most U. S. iron ore from Lake Superior (background) to lower lakes.

Machines conquer tough slope-paving job

How would you place a crushed-rock blanket on a 1 on 1½ slope?

And how would you concrete this slope without a face form?

Faced by these problems when his firm took a contract at Sault Ste. Marie, Mich., J. D. Tuller of Red Bank, N. J. developed the answers after he had made a fruitless search for ready solutions.

Western canal-lining equipment came nearest to his needs, but these machines generally worked double-slope and they didn't provide for thick sections and frequent joints.

Slopes were the inner surfaces of parallel 1400-ft rockfill dikes that form a major portion of the headrace for a new U. S. government power plant at the Soo (ENR Oct. 11, 1948, p. 96). Slope toes are 165 ft apart. Dike height is 30 ft, which, at 1 on 1½, makes the slope distance 48 ft 8 in.

Tuller covers the rockfill with 12 in. of 1-in. to 2-in. crushed rock, then places concrete in panels 16 ft wide that vary from 14-in. thickness at the bottom to 8 in. at the top. A toe wall keys into bed rock at the slope toe.

• **Keeping rock in place**—These reinforcing bar projections were handy aids for preserving the exact contour of the previously graded crushed-rock blanket. When concrete forms were in place, cleated ramps could be laid on them to keep men from disturbing the rock—most important because the 1 on 1½ slope was close to the relatively thin blanket's angle of repose.

As Mr. Tuller says, "It was not possible for men to walk on it . . . without entirely destroying the surface."

Getting the stone on the slope, however, was the first problem.

Lacking data on experience of others, Tuller built an experimental dike at his New Jersey yard and tried his own ideas for licking the stone-placement problem as well as the concrete forming and placement problems.

For stone placement he developed a traveler to ride on rails at top and toe of slope. Illustrated by the drawing, it consists of two welded steel trusses carrying an 8-ft hopper that rolls on the bottom chords of the trusses. A 1-ton air hoist reeved with three parts of line pulls from the top to move the hopper up the slope.

In operation, stone comes to the slope in bottom-dump concrete buckets riding on flat-bed trucks. A 50-ft boom crane hoists the bucket to charge the hopper, keeping it full during a slow ascent from bottom to top. Each pass leaves an 8-ft strip, finished to grade. Accuracy of the grade is proved continuously by the small amount of adjustment required to seat concrete forms.

• **Preassembling forms**—Concrete side forms and reinforcing complete with chairs of varying heights are assembled on the ground below the slope. Lifted with the aid of a frame strongback, they are swung, tilted and carefully set so as not to disturb the stone blanket. The lower form is a joint with the toe wall; the top header is erected in place.

Each side form is made up of three 3-in. planks, set to the correct taper and joined by bolted steel plates. Projecting horizontal rods bear up against the top of oversize holes in the 3-in. wood. The rods are clamped in this position, with the aid of exterior shelf angles and a length of ¾-in. bar (see drawing).

To prevent concrete from running out these over-size holes, cardboard shields are stapled around the bars inside the form.

The oversize hole makes it possible to strip forms off the projecting bars without disturbing the adjacent crushed-rock blanket. The form is unclamped by removing the external bar. Then the form is broken away from the slab, raised so hole-bottoms bear on projecting steel (the cardboard shield tears) and slid off the projecting bars, clear of the stone.

• **Making concrete stick**—But stripping is ahead of the story's most ingenious part—the concreting.

In the face of advice that standard highway finishing machines could not be adapted to the work; that mechanical finishing could not be applied—in fact, that a face form was the only answer—Mr. Tuller went back to his experimental dike. It was worth while to gamble a little money in the hope of developing a machine that would save a lot of form cost.

This time he not only had the problem of spreading raw material on the dike; he also had to vibrate that material and finish it, in the meantime making it stay put.

He tried various arrangements of

traveling hoppers, screeds and slip plates. The results were sufficiently encouraging to justify going ahead with final designs.

• **The concreting rig**—A traveler, combining a one-sided hopper (which also acts as a strike-off) and a reciprocating-plate screed was the resulting finishing machine. Sixteen feet wide, it has four wheels that ride on the side forms. A 5-hp electric motor works through a 16:1 reducer and a pair of 3-in. eccentrics to impart thirty 6-in. oscillations per minute to two screeds in tandem. The screeds are 12-in. channels long enough to get continuous support from the side forms. A wooden working platform completes the finishing machine, details of which are shown in the drawing.

Travel up and down the side form is powered by a 1-ton air hoist working through four parts of line to the machine's corners. The hoist is mounted on a rubber-tired carriage bolted to forms at the top of the slope.

Two end members of this carriage are 16 ft apart, sloped to act as extensions of the concrete side forms. For concreting and screeding near the top, the finishing machine rides up onto the carriage frame.

The carriage also serves another purpose: To move the machine to a new slab the contractor secures it to the carriage in top position, unbolts the carriage from the forms and rolls it along the dike's top.

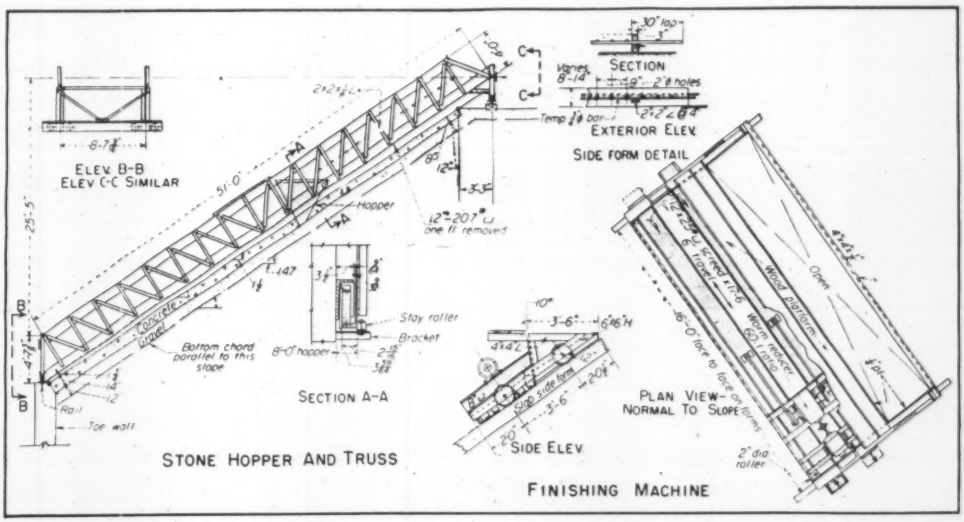
Concrete is delivered by a truck in one-yard buckets and handled by the crane. Part of the concrete is dumped directly on the stone base ahead of the finishing machine, and the piles are leveled off with vibrators. The hopper of the machine is kept nearly full at all times as it is drawn up the slope; its rate of speed provides just enough additional concrete to bring the slab to the required finished height. Air vibrators compact the concrete.

After some experimenting, it was found that concrete could be worked satisfactorily without sagging down the slope after the machine had passed over. At the same time it was necessary to retain sufficient workability so that the machine would not ride up on the concrete seriously, and so that an acceptable finish would result.

When the routine was established, four 16-ft panels in alternating positions, amounting to 106 cu yd each, were placed and finished in an 8-hr day. Intermediate slabs are placed by the same method, the finishing machine riding on placed concrete.

Superintendent for the Tuller Const. Co. is Ernest K. Sharp. The job, which also includes the power plant is being done for the U. S. Engineers, Detroit District. Lt. Col. John D. Bristor is district engineer and Lt. Col. H. H. Northington was project engineer on the job succeeded this spring by G. B. Malcolm.

PLACING CONCRETE—Here is the way J. D. Tuller answered the question, "How would you concrete this slope without face forms?"



STONE SPREADER, CONCRETE FINISHER—Hopper riding on spreader-truss chords (left) is powered by an air hoist. A similar hoist moves finishing machine (right) up the side form. Ready-strip method of clamping reinforcing rods to side form also shown.

HOUSE AND SENATE CHAMBERS (l. and r., respectively) now have new roofs. Contractor had to schedule work when Congressmen were home.

New strength and beauty built into Capitol

NEW DECORATION in the chambers of Congress is getting the pleased approval of legislators and visitors alike these days. Yet few visitors realize the basic structural changes that have gone on during the past two years, and are now largely hidden behind the new plaster and stainless steel.

The new rostrum and visitors' balconies are visible; not so the new roof framework, the extensive wall repairs and the modern air conditioning system. These are the elements that make it possible to view the new decorations not only with pleasure, but with composure.

• **Old roofs weak**—Plans for the job began about eleven years ago, when an engineering survey revealed dangerous deficiencies in the 92-year-old roofs of the Senate and House wings. Imminence of World War II blocked plans for a complete overhaul, but temporary safety measures were imperative. A maze of structural steel trusses was installed in both chambers to support the weakened overhead, and Congress operated under it from 1940 to 1949.

By the end of 1948, David Lynn, architect of the Capitol, had completed plans for rebuilding the roof over the Senate wing and for remodeling the Senate chamber. The Construction Committee of the Senate, after approving the plans, gave a green light to construction. Qualified contractors throughout the nation were invited to bid on the project. Only one firm bid was received and that one was more than half again the original authorized cost. The contractors shied off from lump-sum bids because of suspected structural complications in the nearly century-old building. Subsequent events proved that the bidding firms' suspicions were well founded.

Then Consolidated Engineering Co., of Baltimore, was selected to perform the work on a cost-plus-fixed-fee basis. The Baltimore firm's work was known on Capitol Hill, the present House Office Building and the Annex to the Library of Congress having been built by Consolidated.

• **House follows suit**—Soon after, the House of Representatives decided to have similar work done, and, with the approval of the House Roof and Chamber Construction Committee, Consolidated again was selected, on the same type of contract. Work proceeded simultaneously on both wings throughout the job.

The contracts called for work to be performed in two stages, each during scheduled recesses of Congress. The major work in the first stage was the reconstruction of the roofs, with the work area limited to the space upward from the spectators' galleries floors and the time restricted to the period from July to December, 1949. (Work-start was delayed for a short time when Congress failed to adjourn on schedule.)

• **False roof first**—One of the contract requirements was that the interior of the chambers must be protected from the weather during roof reconstruction. A pipe scaffolding that came within a few feet of the temporary roof steel supported new temporary decking that kept out the elements. Joining the inner walls on all sides, this waterproof structure also served as a work platform for the contractor's men.

Work on each wing required the erection of a 150-ft derrick mast, based on the floors of the chambers and projecting 110 ft above the outside roofs. Hundred-foot booms on these derricks handled the old materials removed from the roofs and the new structural steel that was installed. To provide support for both the derrick and the scaffolding it was necessary to provide additional chamber floor support by spanning steel girders between walls below.

• **Nineteenth Century materials**—Roof demolition work involved remov-

ing old skylights as well as copper roofing that had weathered 92 years. The old copper was of a quality not often seen, coming from a practically pure vein in a Maryland mine of the 1850's. Almost 40 tons of copper were removed from the Senate wing roof and 36 tons from the House. Roofs had been supported by cast iron and wrought iron, the structural uncertainty of which had led to the installation of the temporary steel supports in 1940.

Whereas the old roofs were of copper laid on cast iron ribs and wooden nailing strips, the new roofs, supported by steel trusses and beams, are made up of 4 in. of lightweight concrete, a layer of built-up roofing, 2 in. of foam glass insulation, another layer of built-up, red rosin building paper and then battened copper-sheet roofing.

• **Making concrete stay on slope**—Placing lightweight concrete is not an everyday job; getting the right consistency proved a problem. The concrete was required to reach a 28-day strength of 2500 psi., to have not more than 5-in. slump, and to weigh no more than 105 lb per cu ft. The design mix was one part portland cement two parts fine and two parts coarse lightweight aggregate.

However, when concreting started it was found that this mix would not stay on the maximum slope, which was 3¼ in. on 12 in. Increasing fine-aggregate volume and decreasing water did the trick, and thereafter the concrete stayed in place.

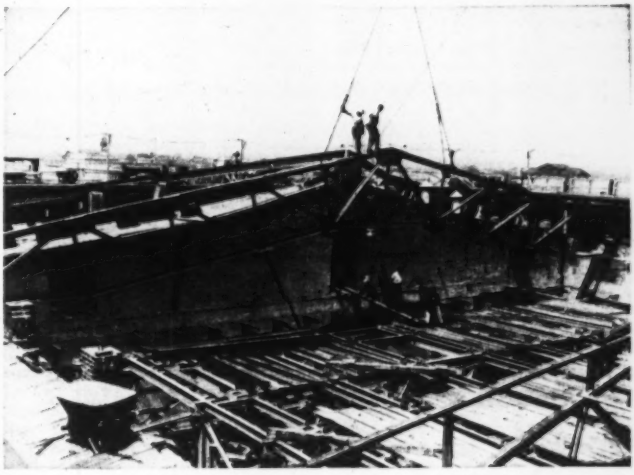
• **Stainless steel in ceilings**—While roof work proceeded on the outside, ceiling work went ahead inside. The old ceilings were of cast iron—nearly 120 tons in the House and about the same in the Senate. The new ceilings—said to be the first of their type—are of stainless steel and ornamental plaster, their stainless steel portion serving the triple purpose of light reflection, air conditioning and sound conditioning.

The steel is perforated with 14 holes to the square inch. These holes absorb sound and act as tiny orifices to pass conditioned air from the roof-ceiling space. Steel is painted white, making an effective light-reflecting surface.

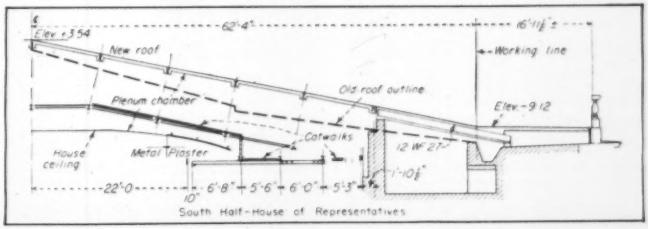
Providing ornamental plaster for the upper walls and the ceilings around the stainless steel was difficult. On this work the headaches came when the call went out for plasterers. Ornamental plastering apparently is becoming a lost art, because Consolidated had to scour the country to obtain qualified workers.

It was a nip and tuck race right

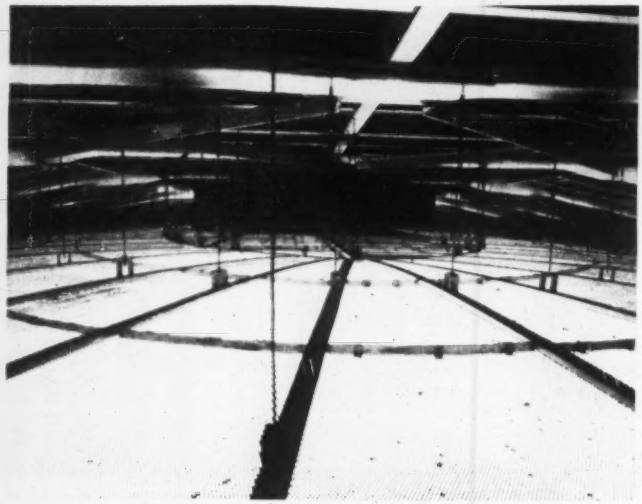
WORKING PLATFORM was supported from chamber floor. There are three separate supports for House roof in this picture. Flat truss was under old ceiling, and emergency wartime measure; Fink truss supported original roof; arched truss will support new roof.



NEW ROOF TRUSS goes into place in House wing. Original brick walls had to be raised, repaired and reinforced to carry new roof load. Cast iron brackets on back wall carried cast iron cornice of original ceiling.



HALF-SECTION looking each (intermediate between trusses) shows how much higher the new structure is. Space between new roof and ceiling is a fresh air plenum chamber.



CEILING VENTILATION is through thousands of small holes perforated in thin sheets of stainless steel, which are painted white on the exposed side.

PLASTER BAND surrounds ceiling's perforated stainless steel sheets.

down to the wire to complete the first stage of the work in contract time. A 41-day general strike in Washington had thrown the contractors far off schedule, but the time lost was regained by round-the-clock working. The nature of the job prevented the addition of extra workers, since the work area was restricted and each portion of the job had to dovetail with other operations.

During the final weeks the temporary protective roofs were torn down supporting girders removed from beneath the floors and the floors restored to their original condition complete with furnishings.

On January 3, 1950, Congress reconvened in its reconstructed and partially remodeled quarters. Meanwhile Consolidated worked on preliminary plans for the second stage of the work scheduled to begin early in July.

• **Second-stage work**—As in the first stage, the contract required that the remodeling be done only during the recess period of Congress. By the summer of 1950 we were involved in the Korean conflict, and the press of urgent business in Congress again delayed adjournment. Work was finally begun in the Senate on Aug. 15 and in the House on Sept. 1, six and eight weeks, respectively, behind the scheduled working date.

The term "remodeling" has an innocent sound, but just as many structural problems were encountered in this stage of the work as in the reconstruction of the roofs.

In the first stage of the work the new roof supports had been run across to the outer walls of the building, which for the most part were in sound shape and required not too much strengthening. The work in the interior of the chambers, however, revealed a lacework of cracks in the walls, and extensive structural improvements, even going down to the base of the walls, were required.

When the shell of molded cast iron which had lined the inner walls of the chambers was torn out, entire wall sections were found whose bricks had cracked and crumbled. These were completely rebuilt, and a brick and steel parapet constructed to support the lower portion of the spectators' galleries, which rest on the inner wall area.

Further use of iron in the old building was discovered when the spectators' galleries were torn out. The floors of these had been laid on iron railroad rails, between which wood planks had been bolted. New structural steel supports with built-in risers were fabricated for the galleries, onto which pre-cast lightweight concrete slabs were laid. Remaining undisturbed under the new gallery floors are the cast iron ceilings of the corridors which run around the chambers in both wings. The new gallery floors were covered with rubber tile, and specially designed noiseless seats were installed.

The old rostrums were torn out of each chamber to make way for the newly designed rostrums for presiding officers. Floors of both chambers required extensive reinforcing to accommodate the new rostrums, which was accomplished by tearing out large portions to install steel girders across bearing walls below.

The areas beneath the floors of both chambers are now plenum chambers for the modern air conditioning system. Smoke tests conducted before the Congress moved into its newly renovated quarters revealed a perfect control of air currents, a happy condition that was arrived at only after exhaustive engineering research and on-the-job experimenting.

All the doorways in both chambers were rebuilt and strengthened with steel lintels, and new doors of mahogany and walnut installed throughout, both on the floor of the chambers and in the galleries.

Following the strengthening of the floors and rebuilding the walls, work proceeded without any major difficulties.

However, again the work developed into a race with time as the contract deadline neared. Starting long behind the scheduled working date, the contractor gained the lost six weeks in the House and eight weeks in the Senate by further round-the-clock working. When Congress convened in January of this year, the job was complete.

Consulting engineers on this work were Thomas W. Marshall and James M. Gongwer. Lewis C. Prell was superintendent for the architect. Herman W. Berger, project manager, and Charles Driver, superintendent, represented Consolidated. Francis P. Sullivan was associate architect, and Harbeson, Hough, Livingston and Larson were consultants.

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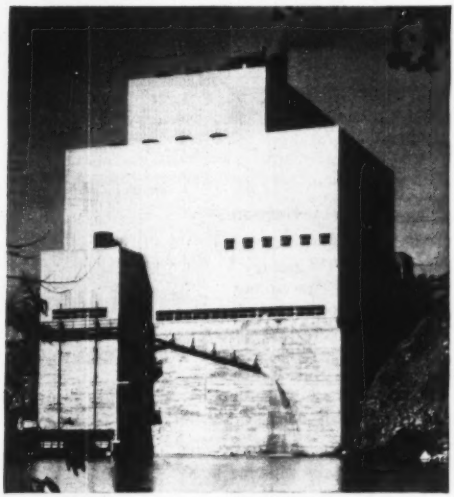

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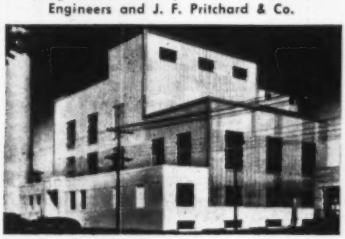
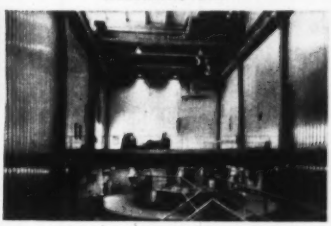


Tennessee Valley Authority Watauga Project
Elizabethton, Tenn.



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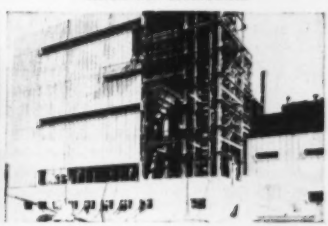

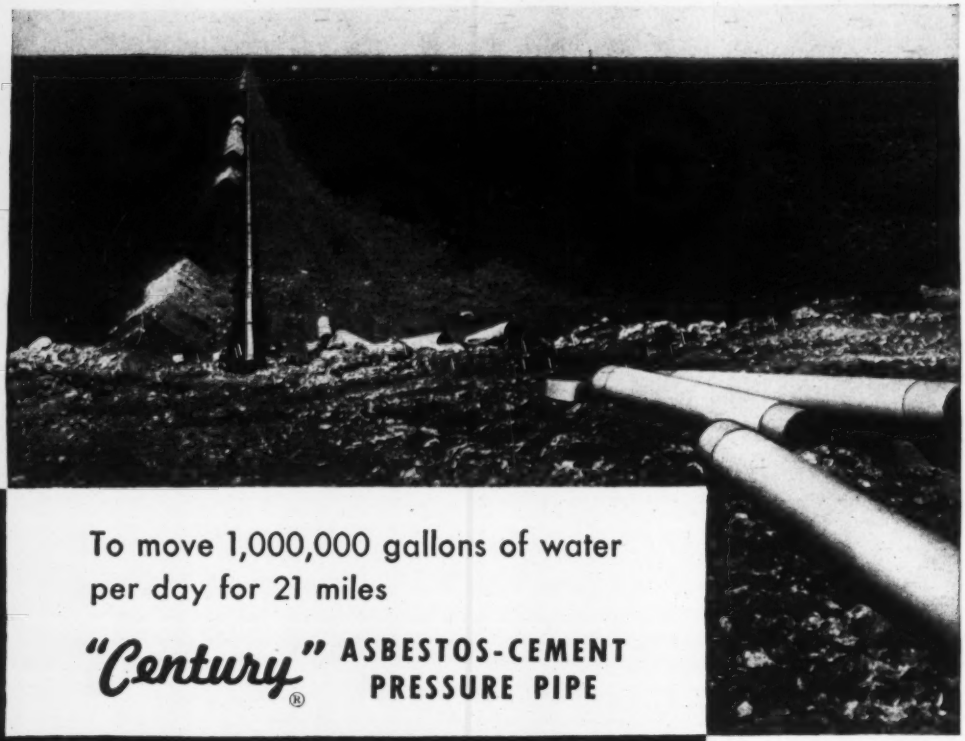

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Canadian pavement design defended

Norman W. McLeod

Engineering Consultant
Canadian Department of Transport
Ottawa, Ontario

IN THE AUGUST 10, 1950, issue of ENR, p. 36, there is a discussion by Gayle McFadden, Thomas B. Pringle, and Keith Boyd, Office of the Chief Engineers, U.S. Department of the Army, on a series of articles by the writer that began in ENR April 28, 1949. That discussion was written after the group had spent four days examining three Canadian airports.

Canada is a large country, and her engineers have constructed several hundred airports during the past ten or twelve years. It is of interest to Canadian engineers, therefore, that Messrs. McFadden, Pringle, and Boyd would look at three Canadian airports in four days, admit that they found the runways at two of the three in very satisfactory condition (the runways at the third were being strengthened and lengthened because they were so grossly overloaded by and too short for current four-engined aircraft), and yet publish a discussion that so completely disregards the long experience of Canadian engineers familiar with their own conditions, and with the detailed construction, maintenance, and performance history of their own airports.

• **Canadians taxpayers also**—Concerning the original series of articles, these observers state that "such an outspoken indictment of design methods specified by the Corps of Engineers was a matter of considerable concern to the tax-paying American public, as well as engineers responsible for such design." We would like to point out that the Canadian taxpayer also has a vital interest in this matter. The Department of Transport's investigation of Canadian airports has proven, to our satisfaction at least, that on the several hundred airports built in Canada, the designs employed by Canadian airport engineers have saved the Canadian taxpayer many millions of dollars that would have been expended for unnecessary construction materials and operations, if the design requirements recommended by the Corps of Engineers had been adopted here.

• **Support from U.S. Navy**—Because it pertains to their own immediate territory, the writer believes that the most "outspoken indictment of design methods specified by the Corps of Engineers" has been provided by the test data and texts of the several papers and discussions published by the Bureau of Yards and Docks of the U.S. Navy, as a result of tests they have made at some 60 airports within the United States. That the findings of the Bureau of Yards and Docks are in general agreement with those of Canada's Department of Transport is verified by the following quotation from a discussion by F. C. Tyrrell and L. A. Palmer of the bureau that appeared in the 1949 PROCEEDINGS of the ASCE.

"Quoting from Mr. McLeod's closure, 'Canadian experience indicates that an airplane wheel load of any given magnitude can be carried by a pavement and base course which have only a fraction of the thickness specified by U.S.E.D. (United States Engineer Department) design.'

"The experience of the U. S. Navy is in 100 percent agreement with this statement. At the present time (1949) the pavements at 60 of its air stations have been studied and evaluated. These 60 air stations, with few exceptions, have flexible type pavements of from 6 in. to 12 in. in total thickness, and at comparatively low maintenance cost generally, they have sustained the traffic of planes having single wheel loads of from 5,000 lb to 60,000 lb. For the subgrades at these same fields, and on the basis of the (Corps of Engineers) CBR design curves, the pavement thicknesses should have been from 12 in. to 45 in. to have sustained this same traffic."

• **Traffic density on runways**—The principal portion of the discussion by Messrs. McFadden, Pringle, and Boyd is devoted to an attempt to show that the effect of traffic carried by runways at Canadian airports has been much less severe than that of the 5,000 coverages to which experimental test sections were subjected in the Corps of Engineers' accelerated traffic tests, which they assume represents capacity operations at U.S. airports. (A coverage as defined by the Corps of Engineers is an actual passage of a tire over any given point on a pavement.) With the assistance of their own data, it will be shown that this is not the case. Furthermore, it should be particularly noted that Canadian traffic data represent NORMAL AIRPLANE TRAFFIC ON ACTUAL RUNWAYS.

While we will employ the Corps of Engineers' own data for this purpose, we would like to make it perfectly clear that we do not agree that running rapidly repeated wheel loads over a relatively narrow width of pavement (from one to three tire widths), as they did in their accelerated traffic tests, will necessarily provide acceptable flexible pavement thickness design criteria for airport runways. Normal airplane traffic is not applied to actual runways in this manner.

Messrs. McFadden, Pringle, and Boyd state, "Dr. McLeod in his analysis of traffic volume uses a takeoff and a landing each as a cycle of operation. We do not see how this can be a cycle; however, it is readily apparent that this doubles the Army Engineers' traffic evaluation of a takeoff and a landing as one cycle of operation."

In Canada, the term "cycle of operation" is not used in connection with airport traffic. Instead, each landing and each takeoff is referred to as an "operation". The taxiway development at Canadian airports is usually very limited, and aircraft after landing, or before takeoff, use the runway or runways not in service at the time for taxiing purposes. That is, each individual landing or take-off normally involves the use of one runway for the landing or take-off operation, plus the use of another runway for taxiing to or from the administration building or hangar.

It is generally agreed that taxiing is a more severe traffic condition than a normal take-off or landing, since for a given wheel load it is common practice to base taxiway design on 25 percent higher loading than runway design. On this basis, a pavement designed to just safely support a certain wheel load for normal take-off and landing operations is overloaded by 25 percent when used for taxiing. Because of this fact, it will be shown within the next few paragraphs and Fig. 2, that each single operation (take-off or landing) at an average Canadian airport represents as severe a traffic condition as two "cycles of operations" as the latter term is used by the Corps of Engineers. That is, one Corps of Engineers' "cycle of operations" at a Canadian airport is equivalent in effect to four cycles of operations at a U.S. airport having a normal complement of taxiways.

Consequently, as a basis for comparison with traffic at U.S. airports,

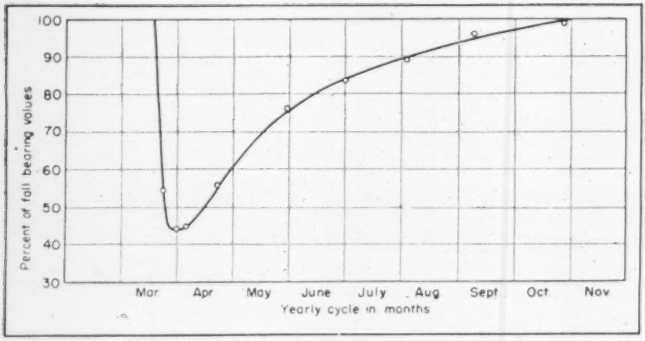


FIG. 1—LOSS OF HIGHWAY SUPPORTING VALUES during spring break-up and their recovery over the yearly cycle in regions subject to deep frost penetration. (From Highway Research Board Research Report No. 10-D, 1950)

the number of traffic coverages they have listed for Canadian airports in the table in their discussion should be multiplied by at least four. If they divided Canadian traffic data by two, as they seem to have done to obtain the figures given in that table, then the multiplier should be not four, but eight.

• **Effect of Spring break-up**—When attempting to compare the effect of traffic on runways at Canadian airports with that of 5,000 coverages in their accecelerated traffic tests, Messrs. McFadden, Pringle, and Boyd have apparently overlooked the important factor of spring break-up to which all Canadian air fields are subjected. In spite of load limit restrictions, that frequently reduce axle loads to 50 percent of normal for several weeks each spring, highway engineers in the Northern U.S.A. and Canada would probably agree that their roads are damaged more during the spring break-up period, than by all the traffic carried throughout the balance of the year. Nevertheless, the Canadian airports referred to in Table 1 of the writer's original articles successfully carried the traffic loads listed without any reduction in loading during the spring break-up period.

The Motl Committee of the U.S. Highway Research Board is studying the change in bearing capacity of flexible pavements on highways that occurs in the northern U.S.A. throughout the yearly cycle. Fig. 1 from Motl's findings in Minnesota indicates that during the spring break-up period, the strength of a paved road on a clay loam subgrade may drop to 50 percent or less of its value in the fall. Last year, during the spring break-up, the Department of Transport measured a decrease of 30 percent in the runway strength from the previous fall value at two airports on the Atlantic and Pacific coasts where frost penetration is shallow, and it is reasonable to expect to find the much greater decrease reported by the Motl Committee, when there is an opportunity to repeat these tests at airports in the interior of Canada where frost penetration is deep.

• **Pavement design curves**—Fig. 1 in the discussion by Messrs. McFadden, Pringle, and Boyd provides a relationship between flexible pavement thickness requirements versus number of traffic coverages for any given wheel load, as indicated by the Corps of Engineers' accelerated traffic tests. Subgrade supporting value is undoubtedly to be considered constant in their Fig. 1, otherwise it has little meaning or value. When the relationships of their Fig. 1 are combined with the latest revision (August 11, 1950) of the Corps of Engineers' flexible pavement thickness design curves for runways, the accompanying Fig. 2 results.

Fig. 2 illustrates the relationship between wheel load (single wheel at a tire pressure of 100 psi) versus number of traffic coverages for flexible pavements underlain by subgrades with in-place CBR ratings of 3 and 10, and for a pavement thickness (base plus surface) of 15 inches.

Similar diagrams are obtained for other pavement thicknesses. For the curve labelled CBR = 10, for example, 160 coverages of a wheel load of 70,000 lb, 550 coverages of a wheel load of 50,000 lb, etc., are all equivalent in effect to 5,000 coverages of a wheel load of 31,000 lb, which represents the Corps of Engineers' design load for capacity operations in this case. The curve indicating a subgrade support of CBR = 3 illustrates similar relationships.

It should be emphasized again that Fig. 2 results from rearranging and plotting the Corps of Engineers' own data.

It was previously pointed out that each take-off and each landing at a Canadian airport is normally accompanied by a taxiing operation on another runway, and that a runway just safe for a given wheel load is considered to be overloaded by 25 percent when used for taxiing. Fig. 2 indicates that by increasing the wheel load by 25 percent, the number of coverages equivalent to capacity operations is reduced to one third. For example, 1,650 coverages of a wheel load of 38,750 lb (31,000 x 1.25) (point D) corresponds in effect to 5,000 coverages of a wheel load of 31,000 lb (point A). Therefore, Fig. 2 shows that a single taxiing operation on a runway is equivalent in effect to three normal take-offs or landings.

Consequently, even on the basis of constant underlying subgrade support, 1,250 coverages of normal runway traffic at a Canadian airport are equivalent in effect to 5,000 coverages at a U.S. airport equipped with a well developed taxiway system.

• **Weak subgrade support**—The Motl Committee's test data indicate that the 50 percent decrease in flexible pavement strength during the spring break-up is due almost entirely to a loss in subgrade bearing capacity of about the same amount during this period. The lowest subgrade supporting value shown on the Corps of Engineers' flexible pavement design chart is represented by CBR = 3. Many hundreds of plate bearing tests performed by the Department of Transport on actual runways indicate that a subgrade with an in-place CBR rating of 3 has approximately 50 percent of the strength of a subgrade with an in-place CBR value of 10. Consequently, the two curves labelled CBR = 10 and CBR = 3 of Fig. 2 represent corresponding subgrade strengths during fall and spring break-up periods over the lowest range of subgrade supporting values for which the Corps of Engineers' design curves permit a comparison to be made.

Fig. 2 clearly indicates that for any given runway in geographic regions subject to severe frost penetration, a very few coverages of traffic in the period of low subgrade support during the spring break-up, provides as severe a test of runway strength as a large number of coverages during the late fall when the subgrade strength is approaching the normal value it would have in the absence of freezing.

For example, Fig. 2 demonstrates that only 29 coverages of a single

wheel load of 31,000 lb, when the underlying subgrade is in the weakened condition represented by CBR = 3 (e.g. spring break-up) is as severe a traffic test on a flexible pavement 15 in. thick, as 5,000 coverages of the same wheel load (31,000 lb) when the underlying subgrade support is represented by CBR = 10 (e.g. fall condition).

• **Where freezing is a factor**—The accelerated traffic tests that led to the Corps of Engineers' criterion of 5,000 traffic coverages for capacity operations were carried out on test sections having relatively constant subgrade support in most cases, and under conditions where subgrade freezing was not a factor. Consequently, because of the frost penetration at all Canadian airports, the traffic records listed in Table I of the writer's original articles for several of these, and Fig. 2, which is based strictly on the Corps of Engineers' own data, proves that the runways at the Canadian airports in question have carried airplane traffic equivalent in effect to at least the 5,000 coverages to which the Corps of Engineers' subjected its experimental test sections.

• **Conditions at Canadian airfields**—Messrs. McFadden, Pringle, and Boyd admit that the runways at the airports at Ottawa (Uplands) and Montreal (Dorval) were in very satisfactory condition at the time of their visit, but they comment at length on the runways at Toronto (Malton) airport. Limitations of space prevent replying to their various comments as fully as we would have liked. Nevertheless, it should be pointed out again that for the average soaked CBR subgrade rating of 3.5 and the flexible pavement thickness of 8 to 10 in., the Corps of Engineers design curves indicate that the runways at Malton were designed for a wheel load of only 2,000 to 3,000 lb according to their method. Plate bearing tests and actual traffic indicated the runways to be safe for a wheel load of about 15,000 lb until an extension was built to one runway during wet weather late in 1946. Plate tests made later on this extension showed it to be safe for a wheel load of only 8,000 lb.

Obviously, these runways were not strong enough for Trans-Canada Airlines' four-engined aircraft with a wheel load of 40,000 lb introduced in 1947, and plans were made to strengthen and lengthen them. This work was going on at the time of the three engineers' visit.

They suggest that the satisfactory condition of the runways at Dorval airport was due to excessive maintenance and state, "It should be noted that the repairs indicated pavement failures sufficiently extensive (in 1944) to necessitate the award of a contract for the work." John H. Curzon, District Airway Engineer for that region from 1943 to 1949, disagrees with the suggestion of excessive maintenance, and points out that the statement just quoted gives an entirely erroneous impression. A contractor was given a contract for some new construction, including roads, at Dorval in 1944. Since he had skilled workmen at a time when even casual labour was extremely scarce, an item in his contract for the relatively small amount of runway maintenance required represented the simplest procedure for having it done.

The subgrade at Dorval has an average soaked CBR rating of 3.1, and for its flexible pavement thickness of 14 in. the Corps of Engineers' curves indicate that the runways were designed for a wheel load of about 5,000 to 6,000 lb by their method. Nevertheless, these runways have carried many tens of thousands of operations of aircraft with single wheel loads of 25,000 to 37,000 lb, and with dual wheel loads varying from 40,000 to 50,000 and occasionally even to 70,000 lb.

Engineers elsewhere can be assured that Canadian airport engineers are as safety conscious as those of any other country, and that they neither design nor construct runways "so thin as to allow a wheel to fall through." However, if aircraft with wheel loads several times greater than those for which the runways were designed are to be operated from any given airport, trouble is expected for Canadian airfields, as it would be elsewhere, and the remedy adopted is runway strengthening, just as it seems to be in any other part of the world.

The Department of Transport's attitude toward rigid and flexible pavements for airport runways can be easily explained. Provided that each pavement type is properly designed, there is no preference for either, and designs for every project are worked out on the basis of both rigid and flexible pavements. Frequently estimates or conditions governing a project indicate that only one of the two pavement types can be considered. In all other cases, alternate bids are called for on both types.

• **Contentions not proved**—In summary, we would like to emphasize that far from proving their contention that the effect of aircraft operations on runways at airports in Canada would correspond to only light traffic on the U. S. Army Engineers' accelerated traffic test sections, Messrs. McFadden, Pringle, and Boyd have provided a means for demonstrating that because of the frost penetration and the resulting decrease in subgrade strength during the spring break-up period at Canadian airports, the effect of recorded traffic on the runways at Canadian airfields has been at least as severe a test of the Department of Transport's method of design as the 5,000 coverages applied by the Corps of Engineers to their test sections have been of their CBR method.

Finally, we would like to refer the reader to the section, "Conclusions

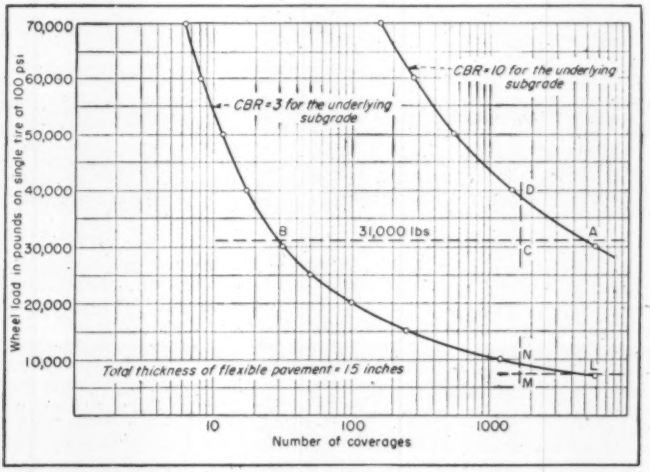


FIG. 2—INFLUENCE OF SUBGRADE SUPPORT on the number of coverages of each wheel load that is equivalent to 5,000 coverages of the design wheel load when the total thickness of flexible pavement is 15 in. (Based on Corps of Engineers' data)

from study", in our reply (ENR Feb. 23, 1950, p. 44) to a previous discussion of this series of articles by Col. Peter C. Hyzer of the Corps of Engineers (ENR Nov. 17, 1949, p. 40), in which we have summarized our understanding of some of the principal reasons for the current differences of opinion between the Corps of Engineers and Canada's Department of Transport concerning flexible pavement design.

• **Chief difference in methods**—It is pointed out there that the major cause of the difference in the flexible pavement thickness requirements of the two organizations is due to the fact that the Department of Transport's method of design is based upon in-place subgrade supporting values, while that of the Corps of Engineers is based upon the CBR ratings of subgrade samples that have been soaked by total immersion in water for four days. Our own considerable test data obtained so far from 21 airports spaced at intervals across Canada indicate that the conditions on which pavement design should be based vary widely from airport to airport, and are not represented by the CBR values of soaked subgrade samples. If the soaking requirement in the Corps of Engineers' CBR test procedure were eliminated, a long step would be taken toward reconciling the methods of flexible pavement design of the two organizations.

All of the Department of Transport's load test data have been obtained on runways in actual service, and have been correlated as nearly as possible with the observed performance of these runways under recorded aircraft traffic over a period of several years. Consequently, the Department of Transport's equation of design for the required thickness of flexible pavements, $T = K \log \frac{P}{S}$, is in effect a simple mathematical representation of the airport runway construction and performance experience accumulated in Canada up to the present time.

There is some evidence that even this method of design, as it is being currently applied, may be too conservative rather than otherwise. In conclusion, therefore, we would like to repeat that the Corps of Engineers' method based on the CBR ratings of soaked subgrade samples would generally result in such unnecessary degree of overdesign for flexible pavements, that it could not be justified for airport runway construction in Canada.

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Breach of contract by owner

A contract for the erection of a house provided that the contractor was to be paid $1,600 upon the execution of the contract and an additional 20 percent of the contract price when the foundation was laid and the house completely framed and roughed in, if this amount was essential for the payment of materials purchased by the contractor in the construction of the dwelling. The balance of the contract price was to be paid upon completion of the work and its acceptance by the owner.

When the house was completely framed and roughed in, the contractor called upon the owner to make the 20 per cent payment called for by the contract, claiming that this payment was essential in order to pay for materials needed for the job. The owner refused to make the payment and insisted that the contractor furnish a performance bond. The contract did not require the furnishing of such bond. Upon the failure of the contractor to furnish such bond, the owner locked the contractor's toolhouse that was on the job and placed a sign on the property reading "no trespassing." The court held that such acts on the part of the owner constituted a breach of the contract.

The damages that the contractor was entitled to recover for such breach of contract was the profit lost by being prevented from performing the contract. As to the evidence required to prove such loss of profit the court stated: "To recover an award for profit lost by the plaintiff [contractor] it is necessary that the proof of the amount of the profit be made with reasonable certainty, and the proof should not be theoretical and speculative.

"The correct way to ascertain the profit, if any, which plaintiff would have made had it been permitted to complete the work as contemplated by the contract and according to the plans and specifications is to ascertain with reasonable certainty just what amount it would have been necessary to expend for labor and materials to complete the construction of the dwelling as contemplated by the contract and pursuant to the plans and specifications. To this amount, whatever it might be, should be added the total amount expended by plaintiff up to the time of the breach of the contract and the amount for which it is liable. From the contract price of $9,497, the total of these two amounts, if less, should be deducted. By this method the plaintiff will be placed in as good a position as it would have been in if it had been permitted to complete the contract."

(1) Guidry & Swayne v Miller, 47 So. 2d 721. (Supreme Court of Louisiana, June 30, 1950.)

Upset price in contracts

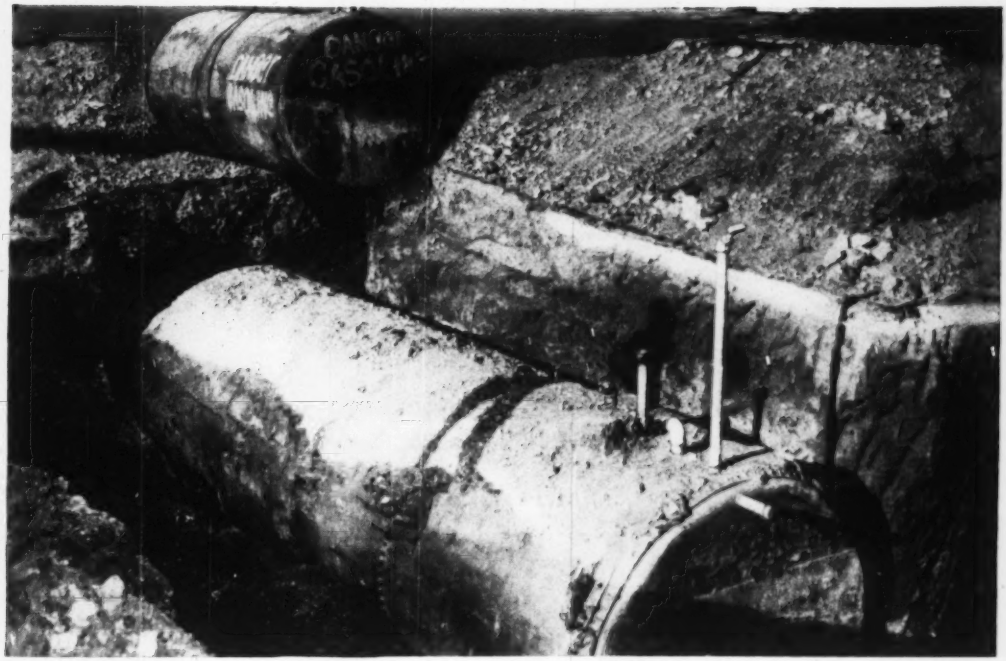
A contract to remodel a house consisted of a written offer to do the work in accordance with certain plans and specifications. The proposal to perform the work was accompanied by a detailed estimate indicating that the cost of doing the job would be $5,925. Adding to this the 10% commission the contractor was to receive for supervising the work, the total cost of the work was estimated to be $6,517.50.

The written proposal to do the work that was submitted by the contractor provided: "Cost of remodeling as per plans to be approximately, sixty-five hundred dollars ($6,500) or less."

The job actually cost considerable more than the estimated cost set forth in the proposal, and the contractor brought an action to recover such excess cost. The trial court allowed the contractor a recovery. That judgment, however, was reversed on appeal, the appellate court holding that the contract guaranteed a maximum upset price and that the contractor could recover such excess cost only on a showing that the contract had been modified so as to allow payment for such excess cost.[1]

The court in its opinion referred to another case[2] where the court held that where the contractor guarantees that the cost of the work will not exceed a fixed sum, the contractor cannot recover the cost of the work in excess of such amount. This is especially true where the contract provides that the amount to be paid by the owner shall in no event exceed the amount set forth in the contract and that the contractor agrees that the cost will not exceed such fixed sum.

(1) Blohm v Kagy, 94 N.E. 2d 516 (Appellate Court of Illinois, Fourth District, Sept. 20, 1950.)
(2) Wuellner v Illinois Bell Telephone Co., 390 Ill. 126, 60 N.E. 867.



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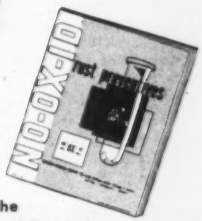

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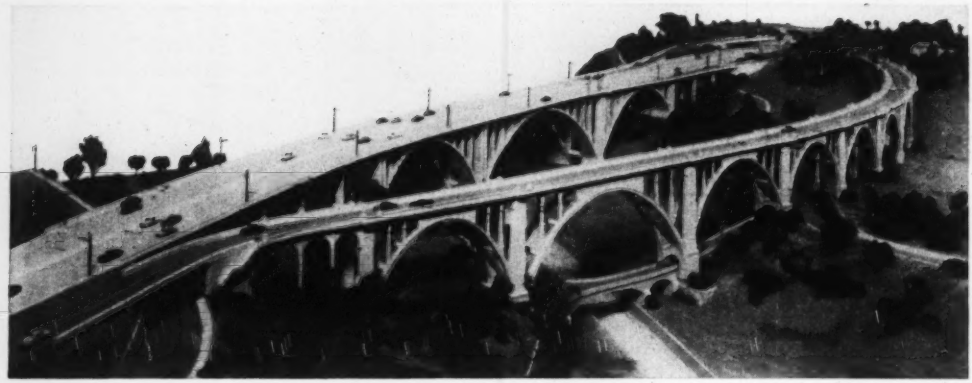


NEW CONCRETE ARCH BRIDGE six lanes wide, which will carry Colorado Freeway across the Arroyo Seco in Pasadena, Calif., will supplement existing 38-year-old bridge in foreground.

Freeway arches have complex design

C. H. Darby
Senior Bridge Engineer

R. S. Barker
Associate Bridge Engineer

California Division of Highways

DESIGNERS of a large concrete arch bridge now under construction in Pasadena, Calif., had to contend with unusual site conditions and roadway layout, and on arch rib, deck system, and spandrel columns that presented unique problems due to the size and proportions of the structure.

It is the most costly bridge in California history financed without toll charges.

Most troublesome factors affecting the design were:

(1) **Arch ribs**—No two spring line elevations are at the same elevation so all ribs are asymmetrical.

(2) **Deck**—Slabs are superelevated, curved and cantilevered as much as 14½ ft from supporting girders.

(3) **Columns**—Excessive and variable width of deck (93 to 171 ft) and temperature effects resulting from ommission of expansion joint along centerline of roadway develop some unusual conditions of deflection and shears in columns between arch ribs and deck system.

• Old neighbor—near famous arch— The new concrete structure is adjacent to an existing concrete arch bridge that takes Colorado St. across the Arroyo Seco, a structure important enough in its day to have commanded full articles in both ENGINEERING RECORD (May 24, 1913) and ENGINEERING NEWS (July 24, 1913).

For nearly four decades Colorado St. has been the only direct route between Glendale and Pasadena. Now it is being paralleled by the Colorado Freeway, which, at some points, is so close that Colorado St. serves as a frontage road for the freeway. This condition exists at the Arroyo Seco bridges.

Economic studies and consideration of the sentiment attached to the old bridge led to the adoption of a concrete arch design for the new structure. Further design studies were made to keep the architecture of the new bridge compatible with the old.

• Cost compares favorably—The new bridge is the most costly one in California history to be financed without toll charges. This is mainly due to the size of the structure however, for on a unit cost or surface area basis it is only 10% more costly than the average for conventional freeway grade separation structures whose heights are only 25 ft compared to the 130 ft maximum for the arch bridge. Actually the most recent awards for construction of freeway structures in southern California show an equal or greater unit cost than the Colorado Freeway Bridge.

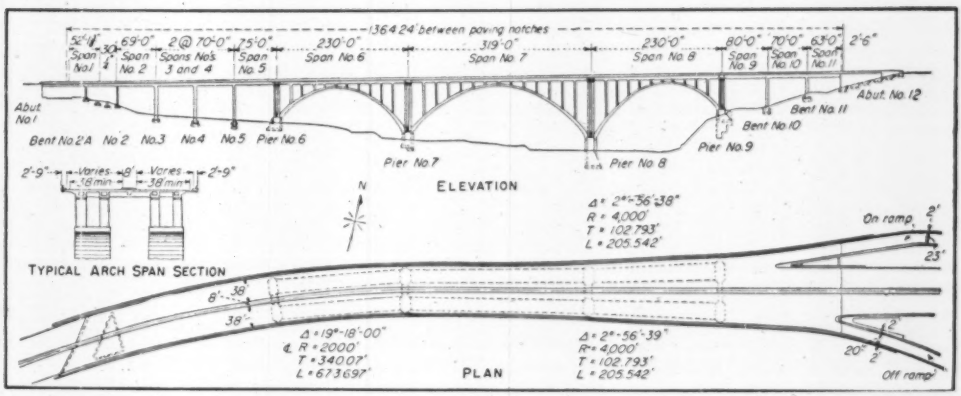
The total contract cost of this first unit of the Colorado Freeway is $3,389,650, of which $2,377,000 is for the Arroyo Seco bridge. The remaining million dollars is for alterations to the west end of the existing bridge, two-grade separation structures and construction of freeway, frontage roads, ramps and street connections. The contract was awarded in March to Guy F. Atkinson Co.

• Roadway plan—From the west end of the bridge to span 7 (see drawing) the center line of the roadway is on a 2,000-ft radius curve. This portion of the deck has a constant width of 93¼ ft. Near the center of span 7 the deck starts to flare to accommodate ramp connections at the east abutment, at which point it is over 171 ft from outside to outside of curbs. The short distance between the Arroyo and the business section of Pasadena did not permit the ramps to be moved off the bridge.

• Reduce cantilever working stresses— The arch rib and longitudinal deck girders of span 6 are on chords to the curved roadway. Mid-ordinate between arc and chord is 5¼ ft.

To decrease the architectural contrast between curve and chords, the deck overhang was kept as large as practicable—9 ft min and 14½ ft max. The latter overhang is not of record proportions (see ENR May 27, 1948, p 78, describing 16-ft 9-in. cantilever roadway deck for the Brooklyn-Queens connecting highway in New York). It is sufficient, however, to cause concern regarding cracking of concrete due to elongation of tensile reinforcement.

Experience with similar but lighter



SIZE OF THE NEW STRUCTURE is shown on these plans. Believed to be the largest concrete arch structure—in point of deck area—ever built, it has a deck width varying from 93 to 171 ft.

construction on a previous job showed considerable cracking where the standard AASHO working stresses had been used. So on the Colorado Freeway Bridge the amount of tension reinforcing was first computed on the basis of a balanced slab design using allowable stresses of 1,000 psi for concrete and 18,000 psi for steel. Thickness of the slab was then increased to reduce these stresses to 750 psi and 13,500 psi, respectively. This amounts to a 75% reduction of AASHO specifications.

Regular working stresses were used for other parts of the structure.

To insure full distribution of heavy wheel loads a girder-type curb and rail was securely keyed to the slab to augment the longitudinal distribution bars that AASHO standards require.

• **Expansion joint omitted**—It has been customary in the design of wide free-way structures to place a longitudinal expansion joint along the center line of the roadway to reduce transverse temperature stresses in the substructure. The result is two parallel bridges with only nominal temperature stresses in the columns and footings.

There were two reasons why the joint was omitted on this structure: First, the edge of the interior cantilever slab on span 8 would have been 20 ft beyond the supporting girder (resulting in about twice the moment and torsional stresses as for the 14 ft overhang described above). Second, it was considered best to have the superstructure braced by girders to resist earthquake shock. The interior deck panels are therefore of conventional slab design instead of cantilever design. A slight exception to conventional practice is the use of four-way reinforcement for those panels that are approximately square.

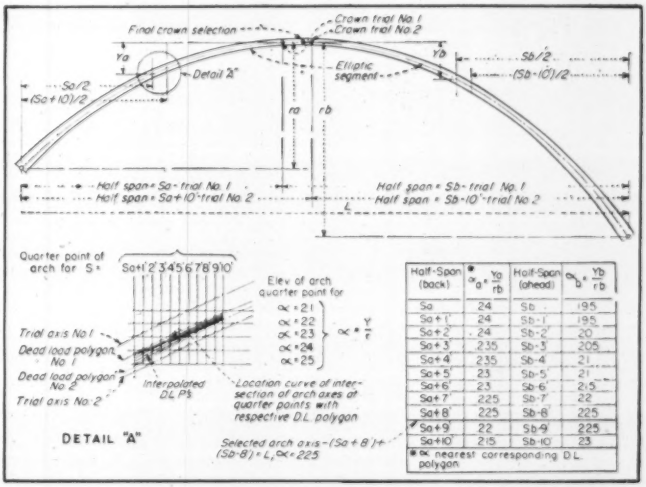
Stress analyses for longitudinal beams proved box girders to be the most suitable type for the heavy stresses in the beams over the exterior columns. This was primarily due to the torsional stresses induced by the cantilever slab and secondarily to the large negative moments over what would be the exterior beam.

For uniformity, box girders were also used over the interior columns. This design gave the arch superstructure a more massive appearance, and made it similar to the approach spans.

• **Arch rib design**—The arch ribs for span 6 are 24 ft wide and are on parallel chords—the bridge center line is on a 2,000-ft radius curve. The piers are on radial lines so there is 5½ ft difference in length of the ribs in this span.

The ribs in span 7 are also 24 ft wide, but are not parallel as part of this span is on the flared roadway. Span 8 is entirely under the flared deck. The ribs vary in width from 24 ft at pier 8 to 32 ft at pier 9. They are 55 ft center to center at pier 8 and 70 ft at pier 9. This diverging arrangement was necessary to provide adequate column spacing for the deck.

Besides the variation in plan di-



Half-Span (back)	∝ = Ya/rb	Half-Span (ahead)	∝ = Yb/rb
So	.24	Sb	.195
So+1	.24	Sb-1	.195
So+2	.24	Sb-2	.20
So+3	.235	Sb-3	.205
So+4	.235	Sb-4	.21
So+5	.23	Sb-5	.21
So+6	.23	Sb-6	.215
So+7	.225	Sb-7	.22
So+8	.225	Sb-8	.225
So+9	.22	Sb-9	.225
So+10	.215	Sb-10	.23

* ∝ nearest corresponding D.L. polygon

SELECTION OF ARCH DIMENSIONS was facilitated by a method that is partly graphic. Object is to select arch axis conforming to dead-load force polygon.

mension of the arches, each rib is asymmetrical. This is the source of the major difficulty in rib design. Even the center span, originally planned as symmetrical in the completed design, had a 12-ft difference in the elevation of opposite spring lines.

Segments of ellipses are used for arch rib axes. Customary design procedure has been to select a trial axis arbitrarily and then to check the selection by superimposing the dead-load force polygon before proceeding with the stress analysis. The check on the first axis of this bridge was disconcerting as there was more than the usual divergence between axis and dead load polygon.

Adjustment of arch axes for these unsymmetrical arches appeared quite complicated at first, because the crown location had to be shifted as well as the correct segment selected. So many variables were involved that the only apparent solution was by trial and error. Accordingly, a second elliptical segment with a different crown position was selected with the intention of enclosing the desired axis between the trial axes.

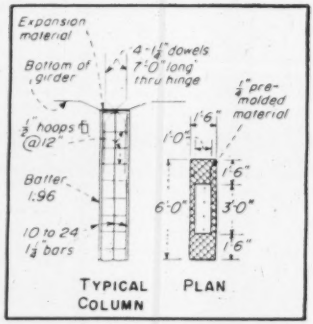
An accompanying drawing illustrates the method used for this work. Detail "A" shows the locations of the two assumed arch ribs and the respective dead load force polygons at the quarter point of the arch. Superimposed on this is a grid showing the quarter-point coordinates of several elliptical segments between the trial axes and interpolated dead-load force polygons for intermediate crown locations.

A design rib was easily selected from these plotted data and in all cases the first selection proved satisfactory. Dead-load stresses were nominal, and live-load stresses were well below the allowable limit. Many days of design time were saved, particularly in comparison with selection of centers and radii necessary to establish the axis of a multicentered arch.

• **Columns are hinged**—Four column bents, with two columns on each arch rib, support the deck system over the arch spans. The columns are 72 in. wide and vary in thickness from 18 to 21 in. at the top.

Had the longitudinal expansion joint, mentioned in the foregoing, been placed in the deck system the transverse stiffness of 6-ft-wide columns would not have affected the design. With the monolithic superstructure, the temperature and shrinkage movements of the deck are transmitted to the arch ribs by an elastic frame with relatively stiff columns at most points.

To reduce the column stiffness and to eliminate the carry-over of temperature moment between deck and arches, hinges were placed at the top of all columns. It is only at the high bents adjacent to the piers that columns are sufficiently flexible to absorb the movement without appreciable stress.



SIMPLE COLUMN HINGE is made of ¼-in.-thick expansion material with 1x3-ft center opening through which dowels extend. All columns are hinged at the top. Some of the shorter columns lacking inherent flexibility to assimilate lateral movement are also hinged at the bottom.

The hinges are relatively simple. They consist of ¼-in.-thick expansion material completely covering the top of the column except for a 1x3-ft center opening. Dowels extend through this opening up into the girders.

Movement is small but still big enough to develop trouble. A total movement of 0.18 to 0.27 in. was computed for concrete shrinkage and temperature contraction, and 0.115 to 0.17 in. for temperature expansion of the deck frame. This is spread over the effective lengths of the bents that vary from 48 to 70 ft.

Influence line values for transverse deflection of arch ribs due to loads at column points were calculated. Equations for column and rib shear for transverse temperature movements were then set up and solved by high-order determinants for spans 6 and 8 (ten equations with ten unknowns). In span 7 the ribs are more flexible, and an approximate solution was used based on successive shear distribution.

Longitudinal temperature stresses and wind stresses were more easily determined. Transverse temperature and wind stresses are maximum near the 0.3 and 0.7 points of the spans, whereas longitudinal temperature stresses are maximum near the crown. The combined moments are excessive only at columns adjacent to crown.

It was considered best to hinge the highly stressed columns at the bottom as well as at the top. This would release the bottom moments by allowing rotation.

Consequently, one pair of columns was hinged at top and bottom on the left arch of span 6 and three pairs on the right arch (column heights vary due to superelevation). All columns at four panel points in span 8 are bottom-hinged. No columns were hinged at the base in span 7.

Plans for the bridge were prepared by the bridge department, California Division of Highways, which is also supervising construction. G. T. McCoy is state highway engineer; F. W. Panhorst, assistant state highway engineer—bridges; and Stewart Mitchell, principal bridge engineer—planning. The use of elliptical segments for arch axes is based on a method developed by H. E. Kuphal, associate bridge engineer (retired).

Tunnel lighting improved in Seattle

Light intensity at roadway level in a Seattle tunnel now is 3½ ft-candles instead of one-third ft-candle, as the result of a modification contract recently completed.

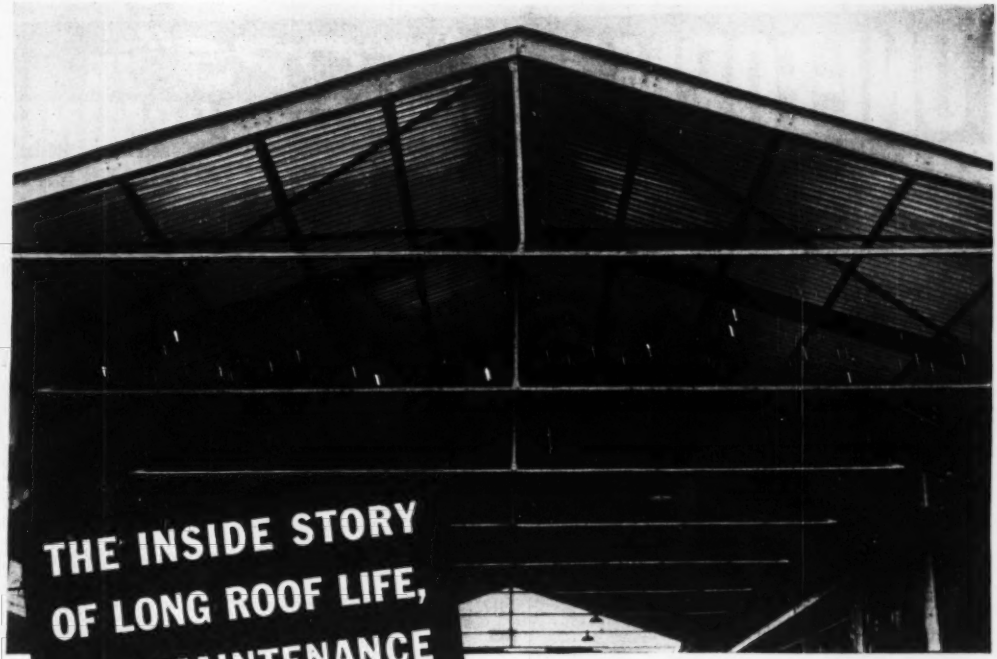
Installation took place in the twin tunnels that provide the city's approach to the Lake Washington floating bridge. Lights have 40-ft longitudinal spacing on the arch, staggered 5 ft right and left of the centerline.

At night the illumination is 3½ ft-candles throughout. For daytime operation, lights at portals give 100 ft candles, tapering off to 3½ ft-candles inside. This tapering enables daytime motorists to make the transition to comparative darkness without momentary blindness. Extra (daytime) portal lights are operated by relays controlled by a photoelectric cell turning those lights on in the daytime and off at night.

This installation replaces a sodium-vapor system that put 0.35 ft-candles on the roadway, with extra lights to provide 10 ft-candles in daytime at the portals. Most of the sodium vapor illumination was along the ceiling.

This job is part of a $4,000,000 city street-lighting program designed to give Seattle the greatest mileage of lighted streets per capita of any U. S. city.

Program construction is under the direction of W. S. Hill. Holert Electric Co. of Seattle, handled the tunnel-lighting job.



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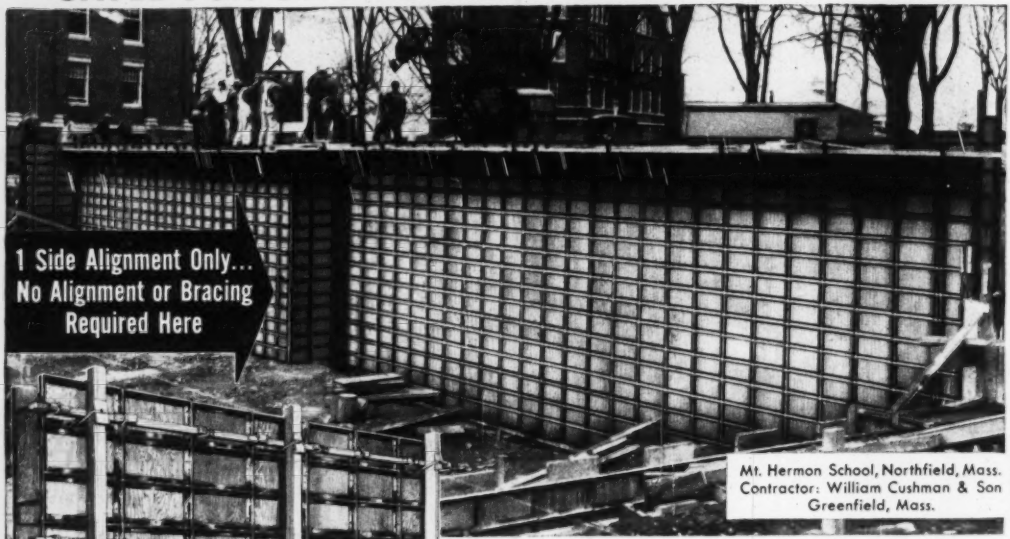

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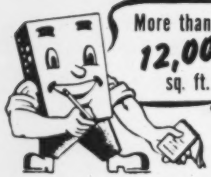

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A sanitary engineer's appraisal:

Sanitary engineering is short on fluid mechanics knowledge

"THERE HAS BEEN no concerted scientific attack on the fluid mechanics problems that arise in sanitary engineering practice. Progress that has been made is the result of the efforts of a relatively few men. The field is wide open to fluid mechanics researchers. . . ."

These were salient points stressed by Thomas R. Camp, of Camp, Dresser & McKee, Boston consulting engineers, in his discussion of fluid mechanics and sanitary engineering during MIT's recent Hydrodynamics symposium (ENR June 21, p. 21). Other portions of Mr. Camp's address follow.

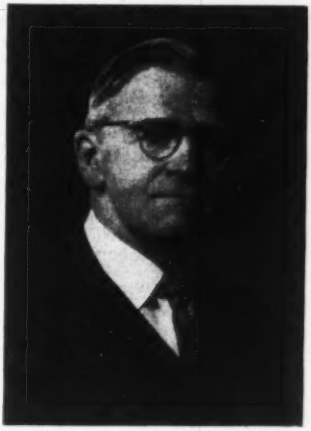
Some hydraulics or fluid mechanics phenomena that are vital to the sanitary engineer seem to be of relatively little interest to other engineers and scientists. For example:

• **What friction factor?**—Sewers seldom flow full. Whether they have circular, egg-shaped, horseshoe, semi-elliptical or rectangular cross sections, sewers usually flow partially full with an open surface. There is evidence that the friction factor for sewers flowing partially full is greater than for the same sewers flowing full. But no extensive precise measurements have ever been made to check the validity of this evidence. Recent experiments on culverts at the University of Minnesota tend to indicate that the friction factor does not change with depth of flow; other runs in the same series of experiments indicate a 30% increase in friction factor as depth decreases to 0.4 the pipe diameter.

Little is known about the head losses involved in, and the proper methods of design of, the transitions and junctions required for sanitary sewers and storm drains. Laboratory studies are badly needed on the hydraulics of simpler shapes of transitions and junctions, keeping in mind that most sewers are circular in cross section.

Handling of suspensions and removal of suspended particles from liquids are important phases of the work of the sanitary engineer, requiring considerable knowledge of fluid mechanics.

Sanitary sewers must be designed not only to care for the full range of flows to which they will be subjected, but also to transport solids in suspension so that no nuisance will result from deposits of sludge. There is indication that the velocity required to transport sediment is independent of the depth or size of sewer—depending rather on the friction factor of the sewer and density and size of suspended particles. This knowledge permits rational design of self-cleansing sewers.



THOMAS R. CAMP—"This field is wide open for study."

• **Flocculation largely fluid mechanics**—In various processes the sanitary engineer must: Promote flocculation, avoid settling; promote both flocculation and settling; promote settling of heavy particles, transportation of light flocculent particles. Knowledge of settling velocity is fundamental to all studies of sedimentation and sediment transport.

Recent experiments on drag coefficients for spheres and other shapes in the transition and turbulent regions of flow have extended greatly the knowledge of settling velocities of individual particles. It has been shown that in a turbulent stream containing suspended particles, sedimentation takes place as in a quiet stream, but is counteracted by turbulent diffusion of the suspended particle upward. Equilibrium is reached when the rate of diffusion upward is equal to the rate of sedimentation downward across any horizontal planes.

Sanitary engineers may profit greatly by work done with the transient conditions found in all sedimentation processes. The differential equation for the transient condition has been integrated successfully, and experiments have demonstrated that the theory is correct.

But this field should be further explored since the usefulness of the results promises to be very great. The differential equation originally set up also is applicable to the problem of reaeration of polluted streams from the atmosphere. This field is wide open for study and promises some interesting and valuable results. Such study should throw light on the reaeration reaction constants now generally used for pollution abatement study.

Flocculation, by which larger suspended particles are formed from smaller suspended particles and colloidal particles, is the sanitary engineer's principal method of producing settleable suspensions in water treatment. After the formation of molecular precipitates, flocculation proceeds first through the action of Brownian movement until the small crystals outgrow colloidal size. From this point flocculation must proceed by turbulent mixing. Time required for flocculation is consumed by the physical process of building up the particles by turbulent mixing. It is thus a problem in fluid mechanics.

Speed of flocculation is directly proportional to the velocity gradient at a point. It is possible to compute the mean velocity gradients directly from the energy dissipated in mixing—a concept that has been extremely useful in flocculation studies.

• **Flow through filters**—Filters of porous media (such as sand) are commonly used for water treatment, and are frequently used in sewage treatment processes. The laws of flow of clean fluids through porous media are based on Darcy's law, derived about 100 years ago. This law states that

the velocity of flow through a porous medium is directly proportional to the hydraulic gradient.

Permeability of the porous medium is used widely now in soil mechanics investigations, in studies of ground water flow, filtration studies and studies of the flow of oil and gas through porous media. The permeability coefficient has the dimension of a velocity, but its value depends upon the density and viscosity of the fluid, the porosity of the medium and the size and shapes of the grains comprising the medium.

A rational equation showing the relations between the factors affecting the permeability coefficient holds approximately during the filtration process in which sediment is deposited on the surface of the sand grains within the body of a filter. This finding is basic to the problem of filtration but needs to be extended to make the results useful in actual design work.

• **Ground water unknowns**—Fundamental research on the movement of ground waters is needed badly. Very little scientific study has been given to the matter by sanitary engineers. Considerable progress, however, has been made by others, particularly scientists connected with the oil industry and investigators in the soil mechanics field.

When one considers the widespread belief in the use of the divining rod for ground water supplies and the relative success of Kenneth Roberts' book, "Henry Gross and His Dousing Rod," it is not surprising that topnotch scientists are loath to enter the field of ground water supplies. Let us hope that some brave souls will throw their hats into this ring.

• **Fluid mechanics of gases**—The sanitary engineer is frequently concerned with the problem of dissolving a gas in a liquid or removing a gas from a liquid. The solution of oxygen into polluted streams from the atmosphere is a natural process, the time rate of which is known only approximately. The same process is undertaken artificially by the sanitary engineer in aeration such as occurs in the activated sludge process of sewage treatment.

The function of aeration tanks in this process is to supply dissolved oxygen to the bacteria and to keep the flocs in suspension to facilitate flocculation and adsorption. In most plants air is diffused near the bottom of the tanks to supply the oxygen, and also to provide the mixing necessary.

It has long been known that only 5 to 10% of the oxygen introduced with the air is actually dissolved into the mixed liquor in the tanks. Since cost of power for compressing the air is one of the major items of expense in this process, it is obvious that gross waste of power is inherent in conventional designs for aeration tanks.

One method of reducing this waste is to produce smaller air bubbles than are possible with diffusers now commercially available so as to increase the time of rise of the bubbles in the tank and to increase the interfacial area between the bubbles and the mixed liquor. Fundamental scientific data are needed badly relative to the rate of solution of oxygen per unit of interfacial area and to means of producing smaller air bubbles. (Such studies are now underway in MIT's new laboratory.)

The sanitary engineer is interested in the rate of solution of carbon dioxide for both water treatment and waste treatment processes, and occasionally other gases such as chlorine and ammonia are applied to water in gaseous form. He is also interested in the removal of both oxygen and carbon dioxide from water to reduce corrosion, and in removal of air from water in priming systems.

• **Flow in pipes**—About half the expenditures for waterworks in this country are made for pipe distribution systems. The investment in such systems totals $100 to $200 per capita served, pipes in distribution systems form complex underground networks.

The carrying capacity of the system in terms of fire flows and adequate quantity and pressures for normal use is the best measure of whether the consumer's dollar has been well spent.

Development of reliable and adequate means to determine the carrying capacity of pipe networks has been extremely slow; and it is fair to remark that no existing distribution system has been adequately analyzed for its carrying capacity or designed for best economy. The reason for this state of affairs is the tremendous complexity of the hydraulic problems involved.

An analysis of the pipe network problem indicates that the number of variables is equal to twice the number of pipe elements, plus one. Since the number of pipe elements between junction points in a pipe network for all but the smallest village will run into the hundreds or thousands, it may be seen that a mathematical solution will involve far too many simultaneous equations for practicability. Trial and error solutions involving many simplifying assumptions and skeletonized networks are commonly used. However, even with the Hardy Cross method the labor is tremendous and convergence of the errors is not guaranteed with all systems.

Use of an electric network as a true model for the hydraulic system is on the point of perfection, and commercial electric analyzers are now on the market which can be used to represent hydraulic networks in true model fashion. This is a major step forward, but much sales effort remains to be extended to obtain general use of the new tool.

• **Waves and tide**—In studies of pollution in lakes and tidal estuaries, prevailing currents and currents set up by wind are important factors requiring evaluation. One of the methods which has been used for many years for studying such currents has been to release floats which project above the water surface and to plot the position of the floats at various intervals of time after release by means of a sextant or by sighting the floats from fixed points on the shore. The floats are usually designed as surface floats or deep floats, the intent being to measure the velocities of the water at or near the surface and at various predetermined depths.

Unfortunately, most of the floats have been designed by persons with inadequate knowledge of fluid mechanics, and the results obtained have been of little value as indicating actual velocities of the water. Some laboratory and fundamental research involving drag coefficients for floats is needed badly at this time.

Declining runoff reported in parts of Missouri basin

Runoff yields from the same amount of precipitation are declining in parts of the Missouri River basin, according to a new (but pre-flood) report on water conditions published by the Department of the Interior. This report, "Trends in Climate and in Precipitation—Runoff Relation in the Missouri River Basin" was prepared by Roy E. Oltman and Hubert J. Tracy. It is issued as Geological Survey Circular No. 98 and can be obtained from the office of the Director, U. S. Geological Survey, Washington 25, D. C.

The downtrend noted in this report began about 1930 in some sub-basins draining the mountain ranges. It is believed that this condition reflects a long-term down trend in precipitation, the lag being related to geological conditions.

Long term trends in precipitation were found to be generally downward in Montana, North and South Dakota, Nebraska and Kansas, although there appears to be an upturn since the dry 1930's. Elsewhere in the basin, no trend in precipitation is apparent.

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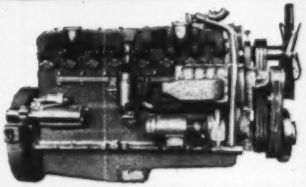

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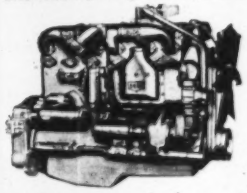

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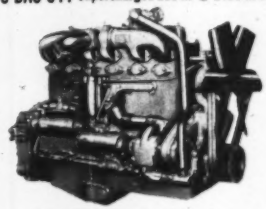

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READER COMMENT

Not bottomless

Sir: The "Bottomless Pit" described on page 62 of your July 12th issue is but one more example of a near-sightedness found in many engineers when confronted by soils mechanics problems in general and earth slides in particular. I can think of no other type of structural failure after which the responsible engineering heads would take steps to increase the load causing that failure.

In this particular instance, which I have inspected on several occasions since its first occurrence, one finds not only the Pennsylvania Highway Department adding load at the top of the slide, but also the Pennsylvania Railroad Company removing material at the toe of the slide as fast as it moves in.

Short range thinking always results in a waste of public and private money, and this is no exception.

WILSON V. BINGER
Consulting Engineer
Youngstown, Ohio

No money, period

Sir: For your understatement of the week, see page 82 of the June 21, 1951, issue of your Engineering News-Record, "Housing pace high:"—You say that there is "some evidence of shortage of mortgage money (ENR May 17, p. 75)."

There is no mortgage money except at an extreme discount. May building starts held up because of previous commitments, but June starts will probably be cut in half because of the dearth of mortgage money. Shortage of mortgage money is the only factor contributing to shortage of houses in defense areas such as Wichita. There is plenty of labor, material, and ability to produce these houses, but no mortgage money.

WILLARD GARVEY
Builders Inc.
Wichita, Kansas

A happy choice

Sir: I was pleased to read the article in your magazine of May 10, 1951, titled "Found—A Sewage Works the Village Can Afford"; I am president of the bank which built and owns this system.

Your article emphasizes the fact that villagers have sanitary problems which can be even more serious than those of large cities, due to limited finances and relatively high per capita cost. Your article shows a practical solution which should be of great usefulness to the engineers faced with this problem.

It may be of interest to you to know that our selection of this type of treatment plant was based upon our personal inspection of the small Griffith treatment plant built at Triangle, Va., which was described in an article in the ENGINEERING NEWS-RECORD (May 16, 1949) by Llewellyn B. Griffith, engineer and developer of this contact aeration process. Our treatment plant is of a later design and embodies the Griffith lift pump and all of the recent automatic operating features. So we feel after six months of operation that we have a much more efficient and simple treatment plant than the older conventional types which are still used extensively for large towns and cities.

J. E. HEALY
President, Mathews Corp.
Mathews, Va.

India's TVA

Sir: In your article on "India's TVA" (ENR May 24, 1951, p 33), you have neatly hit the nail on the head. Your remark that "facing in the right direction and starting to move forward toward a sound and well-defined goal" is in itself a "noteworthy accomplishment," is only too true. The hard struggle involved in producing a realistic policy in the teeth of emotional obstacles and to get one's feet firmly set on the path that leads to the desired goal by the shortest route is something which is not easy for others to appreciate from outside. That is why these words touched a sympathetic chord in my own mind.

SUDHIR SEN
Secretary
Damodar Valley Corp.
Calcutta, India

Shorter volume formula

Sir: Just for the record I would like to make a revision of the Long Island Railroad formula published in ENR Dec. 28, 1950, p. 38. In the formula: $V = LP/24$, substitute 12 for 24. Then,

$$v_1 = y_1$$
$$v_2 = y_2$$

instead of $v_1 = 2v_1$ and $v_2 = 2y_2$ as originally suggested.

This revision reduces the operation from 13 steps to 11 steps.

MARVIN GATES,
Brooklyn, N. Y.

FOREIGN

IBRD active on three building fronts

Reports from the International Bank For Reconstruction and Development announced that the Egyptian Government has requested and that it is sending a mission to that country to examine projects for which bank participation may be requested.

Under consideration are potential requests for irrigation, hydroelectric power development, and fertilizer and steel plants in the area of Aswan. The mission will also discuss methods of financing proposed investments in Egypt. Heading the mission is Joseph Rucinski, Chief of the Loan Department's Asia and Middle East Division and R. A. Wheeler, the bank's Engineering Adviser.

• **Nicaragua gets loan**—Meanwhile the bank has made two loans amounting to $4,700,000 to aid in the development of the Republic of Nicaragua. One loan amounting to $3,500,000 will be for the purchase of highway construction equipment and machinery. The other $1,200,000 will be for the purchase of agricultural machinery.

The highway equipment will be used by Nicaragua on eight highway and road building projects. The program will take three years, cover 259 kilometers with asphalt pavement to permit heavy traffic the year around.

The roads are expected to open up new agricultural territory, as well as link major centers. Biggest of the highways will link Managua, capital of Nicaragua with Leon, the country's second largest city.

The agricultural loan will be primarily for the purchase of tractors. At present Nicaragua has only some 300 tractors tilling its 128,000 kilometers of land area.

• **In Paris**—the bank has just announced its first loan consisting of currencies entirely made up of currencies other than that of the U. S.

The loan of 875,000 British pounds to expand the electric power capacity of Iceland will go primarily to two projects: that on the Sog River which is to increase the power supply in the Reykjavik area where 40% of Iceland's population is centered, as well as 80% of its industries; and that on the Laxa River which will feed power to Akurevri, second city of Iceland. It is estimated that the new projects will meet power needs as far ahead as 1957. Total cost of the two jobs is put at $13,000,000. The bank's loan will be used for goods and services obtained in Europe. American equipment will be furnished through ECA in amount about $5,000,000.

• **The golden track**—Also of interest on the banking front is the $15,500,000 loaned by the Export-Import Bank to build and improve the high-

(Continued on page 50)

BRIDGE OF FREEDOM—This is the new Ponte Della Liberta crossing the Tiber River at Rome. The construction of this ornamental bridge, started before the war and interrupted because of it, was resumed a couple of years ago. It is now complete and open to incoming traffic to the Eternal City from one of the highways. In the background, part of the ancient city, and the dome of Saint Peter's can be seen. Ponte Della Liberta means "Bridge of Freedom." To Romans it is a symbol of the postwar renascence of Italy.—Wide World Photo

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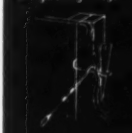

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When you buy an *Improved* Walco Heavy Duty Adjustable Pipe Wrench safety is only one of the plus factors you get. There are many others—light weight—quick ratchet action—renewable lower jaw—calibrated pipe scale—perfect balance—and long years of satisfactory service.

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ways, waterways and power stations or the Belgian Congo. The Belgian Congo has a 10-year plan for public transportation improvements including ocean and river ports, roads and airports which is expected to exceed $150,000,000 a year. The Belgian Congo is one of the world's chief sources of uranium.

Foreign Briefs

• **Island airports**—A party of eight Australian surveyors and engineers has left Sydney for Cocos Island to investigate the work necessary to equip the island as a stopping place for a regular air service between Australia and South Africa. The Department of Civil Aviation has approved expenditure of $45,000 for construction of an airstrip on Fisherman's Island, seven miles off the coast of New Guinea. It is to provide alternative landing facilities for Port Moresby. At present the only alternative airports available when Jackson's Field, Port Moresby, is closed because of bad weather are Lae, on the other side of the Owen Stanley ranges, and Cooktown, on the Australian coast. Construction of the landing strip involves the breaking up of coral pinnacles with bulldozer and explosives and surfacing with compacted coral sand.

• **Puerto Rico moves ahead**—Anatole Solow, housing expert, Pan American Union, arrived in San Juan recently to study the vast housing development program and new construction methods used in the island, and to observe facilities offered there for the establishment of the proposed Interamerican Housing Experimental and Training Center. Solow said this center will prepare technicians from Pan American countries, and will develop construction methods to lower housing construction costs.

• **Long Mexican road**—The 1,500-mile road between Mexico City and Nogales, Sonora State, opposite Nogales, Ariz., which will be the western part of the Mexican branches of the Pan American Highway, is scheduled to be inaugurated before President Miguel Aleman ends his 6-year term on Nov. 30, 1952, it is announced. The road, which has been under sectional construction for several years, is now in service for most of the route. It will represent a total investment of about $90,000,000. During the last four years, 800 miles of the road were paved. This year, $15,500,000 is being spent to pave, top, and place bridges. At present 36 bridges are being placed. December, 1946, 96 bridges were installed.

(*Continued on page 52*)

MUNICIPAL

San Francisco Transit Commission

A bill creating a San Francisco Bay Area Rapid Transit Commission has been signed into law by California's Governor Earl Warren.

The measure appropriates $50,000 to study the rapid transit problems in the San Francisco Bay region.

The law provides that the commission, composed of 26 members, shall aid governmental bodies in the various cities and counties in the area in investigating their interurban and local transit needs, present and future, and in combining their findings and proposals with those of other cities and counties in the area; in furnishing engineering, planning and other technical assistance where not available; in correlating the findings, and with the aid of qualified engineers, fiscal experts and local representatives, develop a master, coordinated rapid transit plan, including an estimate of the cost of construction, acquisition of necessary lands, equipment and facilities.

The law terminates the commission December 31, 1953, unless by a two thirds vote, the commission, on or before September 30, 1953, adopts a resolution declaring that the public welfare and convenience require that its life shall be extended.

Dallas wins housing OK

District Court at Dallas, Tex., has ruled the right of the city's Housing Authority to build a $37,000,000 federal aid housing project outside city limits in the adjacent district of West Dallas, Dallas County.

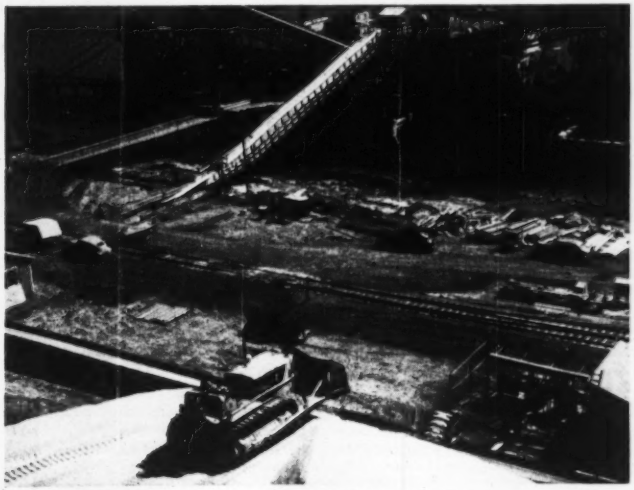
Suit arose when R. D. Whittle and eleven residents of the land on which the project was to be constructed filed asking temporary injunction to restrain the DHA from going ahead on the grounds it was illegal for the city to build outside its limits.

The plaintiffs have filed notice of appeal.

Cincinnati gets new plant

The Formica Co., plastic materials manufacturers, have begun to move into their new $8,000,000 Evendale factory. A second section having 120,000 square feet of floor space will hold two departments with 300 employees. By the year's end, seven other departments will have been transferred.

Total employment at the plant will be 900. Ultimate plans call for a factory of approximately 600,000 square feet. A. M. Kinney, Inc., consulting engineers and architects designed the plant.



A PILLAR OF SALT—Next to the San Francisco loading docks are 300,000 tons of salt with mudflats beneath. Foundation problems were solved by a sand fill blanket on weak sandy clay loom. The wharf is protected from the piles of salt by a hydraulic fill dike for its whole length.

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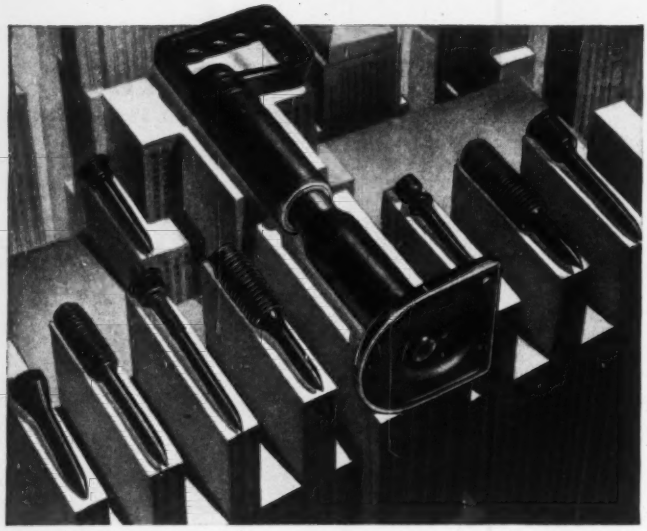

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Foreign . . .

(*Continued from page 50*)

• **Credit for Ambato**—The Export-Import Bank has authorized a $500,000 line of credit for Ecuador to improve the waterworks system of the city of Ambato damaged during the earthquake of 1949. Under study is a $1,000,000 loan to help the country expand its airport facilities at its capital city, Quinto. Also suggested for credit is a hydroelectric plant at Rio Verde to supply the Ambato area.

• **Norse aluminum plant**—The Norwegian parliament has voted an appropriation of $9,800,000 toward an aluminum plant to be built at Sunndalsoera in Moere and Romsdal Province for a production of 40,000 tons annually. The total cost of the plant is estimated at $49,000,000. Economic Cooperation Administration is helping in the financing and will be repaid over a period of 10 years in the form of aluminum from the plant.

• **Technicians to Manila**—The Philippines will receive $3,000,000 worth of United States Aid from ECA for a highway construction and development program to open up large new areas of land for settlement and agricultural production. A special technical and economic mission and funds will be sent from the U. S. Bureau of Public Roads. The crew will have supervision of the project. The project is part of a four year, master road-building plan implemented by the Bureau of Public Works of the Philippine Government.

IT MOVES ON RAILS—This 50-foot-high erecting stage is being used for the construction of German buildings. Shown in Hanover, Germany, recently it was built by Johann Wilhelm Ludowici, the stage makes it possible to build a two-story house in six days. The platform moves up and down electrically, and two small cars which hang on I-supports from it are manned by two bricklayers and be moved in any direction desired.

MEN AND JOBS

THE SWITCH—Leadership of the National Association of Professional Engineers changes hands at the 17th annual meeting in Minneapolis. Laurence L. Dresser, president of Dresser Engineering Co., Tulsa (at left) is the new president of NPSE succeeding S. L. Stolte (at center), St. Paul architect. At the right is Paul R. Speer, district engineer, Surface Water Resources, U. S. Geological Survey, St. Paul, president of the Minnesota State Chapter of NSPE and convention host.

New Appointments

Highway Departments

F. N. Hveem, materials and research engineer for the California Division of Highways, will help the Mexican government to build a 70-mi highway in Sonora.

Three changes in the Texas Highway Department's engineering staff have been announced. **M. C. Welborn,** 31-year veteran with the department, retires as senior engineer of special services. **S. J. Treadaway,** a 30-year employee, will succeed him. **J. C. Roberts,** assistant district engineer at Abilene for nine years, will become acting district engineer there.

State, City and County

Warren C. Hyde, city manager of Albert Lea, Minn., has been named city manager of Jamesville, Wis., succeeding **Henry Traxler,** retired.

W. W. Aultman, water purification engineer for the Metropolitan Water Dist. of Southern California, has become assistant director in the Miami, Fla., water system.

Kenneth Cullen has been named city engineer of Dubuque, Iowa.

Ralph A. Main, Birmingham, Mich., civil engineer, has been appointed Oakland County drain commissioner to succeed the late Earl L. Clark.

Chas. E. De Leuw of Chicago has been retained by the Montreal Transport Commission as consulting engineer for a Montreal subway. He helped design the Toronto subway.

John J. Hunt and **R. E. L. Williams** have been reappointed sewerage engineer and building construction engineer, respectviely, of Baltimore, Md.

Consulting Engineers

Robt. E. Robertson, Jr., formerly of Williar & Robertson, will continue his practice under the firm name of Robertson & Associates at 339 St. Paul Place, Baltimore 2, Md.

Industrial and Commercial

P. A. Wedding, professor of civil engineering at the University of Maryland, has joined the laboratory staff of the Timber Engineering Co., 1319 Eighteenth St. N.W., Washington 6, D. C.

Wm. H. Hasselbach, civil engineer, is director of engineering of the Libby-Owens-Ford Glass Co., Toledo, Ohio.

Carroll L. Mann, Jr., is inspector-engineer of the Atlantic and North Carolina R.R.

James Romano is now on the engineering staff of the water works division of Gannett Fleming Corddry & Carpenter, Inc., Harrisburg, Pa. Gerald Siddons has joined the staff of the Pittsburgh office to supervise construction of about $5,000,000 of the company's work in the expansion of the Greater Pittsburgh Airport for the U. S. Air Force.

Joseph A. Fisher, executive vice-president of the Reading Co. and a civil engineer has been elected president of the railroad to succeed Revelle W. Brown when the latter retires.

David S. Wimick is in the engineering department of Parco Design Corp., 82 Beaver St., Manhattan, N. Y. City.

Corps of Engineers

Col. Reginald Whitaker, former engineer officer for the Berlin, Germany, military post is replacing **Col. A. C. Welling** as Baltimore dist. engineer.

Col. Wm. E. Whipple, Jr., is at Atlanta, Ga., as the Third Army Engineer.

Col. Henry C. Rowland, Jr., is assistant to Col. Louis W. Prentiss, Southwestern div. engineer at Dallas.

Col. Peter C. Hyzer, veteran of World War II and Korea, is the first head of the R.O.T.C. at Norwick, Vt., University.

R. H. McAndrew is construction engineer at Fairbanks, Alaska.

Government Agencies

Governor Allan Shivers of Texas has appointed as members of the Sabine River Authority for terms running to July 6, 1957: **B. B. Rabb** and **John W. Simmons,** both reappointed; and **Peyton McKnight Jr.,** succeeding **C. T. Crosby Jr.** The governor also appointed **Melvin C. Winters** to be a member of the Lower Colorado River Authority for a term expiring Jan. 1, 1953, to succeed the late C. O. Crist.

Resignations

Philo Seagle, asst. director, water and sewer dept., Morgantown, N. C.

Edward E. Beane, city engineer of Concord, N. H., since 1936, has resigned for health reasons.

William J. Ludeker has resigned as Defiance County, Ohio, maintenance superintendent for the Ohio Highway Department.

John M. Gold, of Raleigh, N. C., has resigned as director of the prisons division of the North Carolina State Highway Department to become city manager at Winston-Salem, N. C., where he succeeds C. E. Perkins.

Leroy W. Kern, right-of-way engineer of the Maryland State Roads Commission since 1932, has resigned to enter private employment. He will be succeeded by **LeRoy C. Moser.**

Claude C. Helms and **K. R. Williams,** city manager and superintendent of the municipal water and sewer department, respectively, at Morgantown, N. C., resigned July 17 after the town board reduced their salaries in an economy move.

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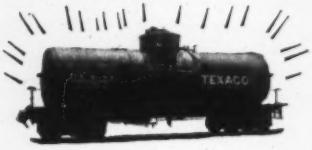
Do it the modern way



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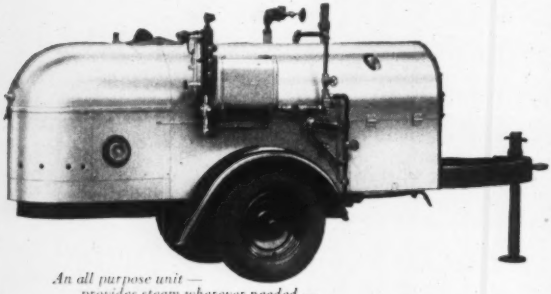

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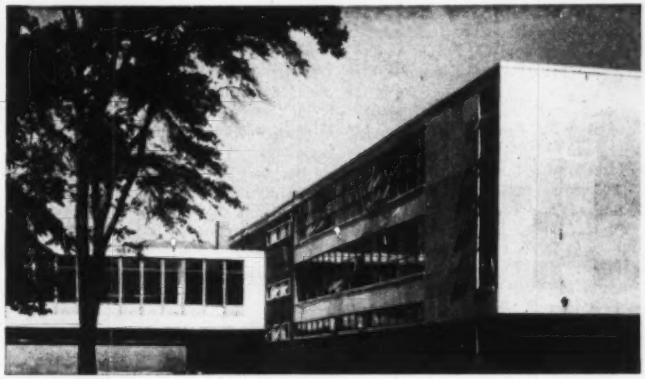

A $435,000 BUILDING—The Department of Architecture and Art recently moved into this new building near Samford Hall. It contains a library, exhibit hall, laboratory rooms for modeling and industrial design, and drafting rooms, together with offices for the dean and his staff.

Seven new buildings are being built at Alabama Polytechnic Institute

A big building program is being carried out at Alabama Polytechnic Institute, Auburn, Ala. Work is under way on seven structures, four on the campus proper, while three others are off-campus fraternity houses financed by the local chapters.

The campus buildings have been made possible by two bond issues, involving the sale of building revenue bonds, amounting to about $3,600,000. One of the buildings is a men's dormitory to house 490 students. It will cost $861,000, exclusive of furnishings.

Other new buildings are a pharmacy building, a creamery, and a food service building. Bids are being sought for three dormitories to house 484 women students.

Highway engineers study at University of Kentucky

Ninety-five men from the Department of Highways in Kentucky recently completed an extension course set up by the University of Kentucky in cooperation with the department heads as a means for upgrading men who were willing to devote part of their own time to such a training course. For men who attended the evening courses at the university, this required 120 hours of classroom work, plus six hours of home work each week.

The highway department provided transportation up to distances of 100 miles and paid the tuition. Men taking the course had to buy their books.

The extension course just completed related to steel and reinforced concrete design, including strength of materials and related mathematics. A new course now is being organized on the application of aerial photography to highway planning.

These are non-credit courses developed through cooperation between W. P. Curlin, commissioner of highways; D. H. Bray, state highway engineer; and D. V. Terrell, dean of the College of Engineering.

New insulation developed for cavity masonry walls

The Structural Clay Products Institute, a nation-wide association of brick and tile manufacturers, has announced a new type insulated cavity masonry wall developed by the Clay Products Research Foundation.

The wall has been dubbed the SCR Insulated Cavity Wall. It features a new type low-cost, easy-to-handle pouring insulation. The foundation claims that the wall is watertight as well as fully insulated, a first in the field of cavity masonry walls that are economically feasible.

No furring, lathing or plastering is needed on the interior wall surface, but can be plastered direct.

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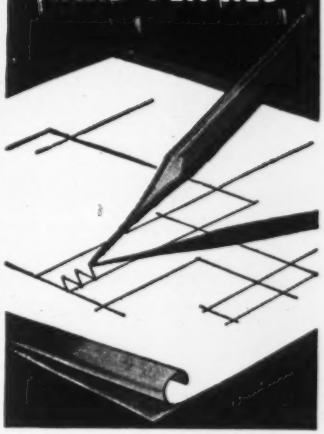

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MEETINGS

Dean S. C. Hollister, of Cornell University at Ithaca, N. Y., has been elected president of the American Society of Engineering Education at its annual meeting in East Lansing, Mich. Other officers elected include: Maynard M. Boring, vice-president in charge of sections and branches; Dean John H. Lamper of North Carolina State Teachers College, vice-president and chairman of the Engineering College Administrative Council. Charles L. Skelly, manager of the technical book department, MacMillan Co., N. Y., was reelected treasurer.

The National Society of Professional Engineers regretfully announces that John D. Coleman of Dayton, Ohio, has retired as a vice-president of its organization.

The Ohio Society of Professional Engineers has named Robert E. Allen of Dayton its new OSPE director in place of Allison C. Neff of Middletown who has resigned as national director. Meanwhile the Franklin County (Columbus) chapter has named the following functional directors: Gould H. Ayres, consulting engineers; Clyed E. Haager, county engineers; Grover H. Detmer, industrial engineers; F. K. Harvey, public utility engineers; H. S. Perry, state engineers; Robert F. Werner, city engineers; and R. W. Shively, junior members.

OSPE has also announced the following committee chairman appointments: W. T. Adams, Middletown, to unauthorized practices; A. C. Neff, Middletown, to intersociety relations; Cecil K. Rose, Columbus, to membership; and Elmer S. Barrett, Chillicothe, to public affairs.

The Georgia Branch of the Associated General Contractors has elected Merrill W. Newbanks of the Merrill W. Newbanks Co., Atlanta, Ga., as its new president. Other officers recently elected at its annual business meeting were W. M. Wheeler, of the J. A. Jones Construction Co., Atlanta, first vice-president; J. T. Higgins of the H & H Construction and Supply Co., Thomasville, second vice-president; W. P. Rose of the W. P. Rose Construction Co., Atlanta, secretary; and Alvin Barge, of Strother-Barge Co., Atlanta, treasurer. Hugh W. Roberts will continue to serve as executive secretary.

The Chicago Chapter of the American Public Works Association has elected Thomas F. Murphy, manager of the Prairie State Equipment Co., Chicago, its new president. Other officers elected are: Samuel M. Clarke, partner in Greely and Hanson, consulting engineers, Chicago, first vice-president; C. L. Baylor, village engineer for Downers Grove, Ill., second vice-president; and Theodore C. Eppig, superintendent of the Bureau of Sanitation, Chicago, secretary-treasurer.

The Associated Equipment Distributors drew over 200 construction equipment distributors and their wives to its mid-summer meeting at the Edgewater Beach Hotel in Chicago. Theme of the meeting was, "Are you still running your business." Speakers included Julien R. Steelman, Korehring Co. and 1951 president of the Construction Industry Manufacturers' Association, Harold F. Hess, CIMA's executive vice-president, and J. F. King, AED's Washington representative.

The Montana section of the American Water Works Association has elected M. F. Henderson, city manager of Bozeman, Mont., its new president at its recent convention. J. R. Cortes Livingston received the Warren Fuller award from the national association for outstanding work in the field of water works. Other officers elected included: Arthur Johnson of Kalispell, vice-president, and A. W. Clarkson of Helena, secretary-treasurer. John B. Hazen of Butte was made national director and John Dennis of Laurel and Sam Ward of Billings, Montana were elected trustees.

CALENDAR

National Conference on Prestressed Concrete, Massachusetts Institute of Technology, Cambridge, Mass., Aug. 14-16.

Canadian section, American Sewage and Sanitation Equipment Association, Royal York Hotel, Toronto, Ont., Aug. 20-22.

National technical conference of the Illuminating Engineering Society, Hotel Shoreham, Washington, D. C., Aug. 27-30.

N. J. Society of Professional Engineers, Manasquan River Golf Club, Brielle, N. J., Sept. 8.

New England Water Works Association, Hotel Statler, Boston, Mass., Sept. 10-12.

Minnesota section, American Water Works Association, fall meeting, Hotel Nicollet, Minneapolis, Sept. 12-14.

N. Y. section American Water Works Association, fall meeting, Whiteface Inn, Lake Placid, N. Y., Sept. 13-14.

Public Works Congress and Equipment Show, Memorial Bldg., Detroit, Mich. Sept. 16-19.

Pennsylvania section, American Water Works Association, Bellevue-Stratford Hotel, Philadelphia, Pa., Sept. 19-21.

S. D. Water and Sewage Works Conference, Chas. Gurney Hotel, Yankton, Sept. 19-21.

Kentucky-Tennessee section, American Water Works Association, fall meeting, Louisville Kentucky Hotel, Louisville, Ky., Sept. 17-19.

Michigan section, American Water Works Association, fall meeting, Whitcomb Hotel, St. Joseph, Sept. 19-21.

Rocky Mountain section, American Water Works Association, fall meeting, Hotel Cosmopolitan, Denver, Colo., Sept. 24-25.

9th International Road Congress, Permanent International Association of Road Congresses, Lisbon, Portugal, Sept. 24-29.

Alabama-Mississippi section, American Water Works Association, Buena Vista Hotel, Biloxi, Miss., Sept. 24-26.

Wisconsin section, American Water Works Association, fall meeting, Pfister Hotel, Milwaukee, Sept. 25-27.

Ohio section, American Water Works Association, fall meeting, Commodore Perry Hotel, Toledo, Ohio, Sept. 27-28.

Missouri section, American Water Works Association, Hotel Robidoux, St. Joseph, Mo., Sept. 30-Oct. 2.

First Pan American convention, International Road Federation, Municipal Palace, Lima, Peru, Oct. 5-6.

Federation of Sewage & Industrial Waste Associations, Municipal Auditorium, St. Paul, Minn., Oct. 8-11.

National Safety Congress and Exposition, Stevens, Palmer House, Congress, Morrison and La Salle hotels, Chicago, Oct. 8-12.

Structural Engineers Association of California, The Akwahnee, Yosemite National Park, Calif., Oct. 11-13.

Engineers Council for Professional Development, Statler Hotel, Boston, Mass., Oct. 19-20.

National Council of State Boards of Engineering Examiners, Statler Hotel, Boston, Mass., Oct. 21-24.

American Bridge, Tunnel and Turnpike Association, St. Francis Hotel, San Francisco, Oct. 21-24.

American Society of Civil Engineers, annual meeting, Statler Hotel, New York City, Oct. 22-25.

American Association of State Highway Officials, Fontinelle Hotel, Omaha, Neb., Oct. 23-26.

California section, American Water Works Association, Fairmount Hotel, San Francisco, Oct. 23-26.

National Standardization Conference, Waldorf-Astoria Hotel, N. Y. City, Oct. 22-24.

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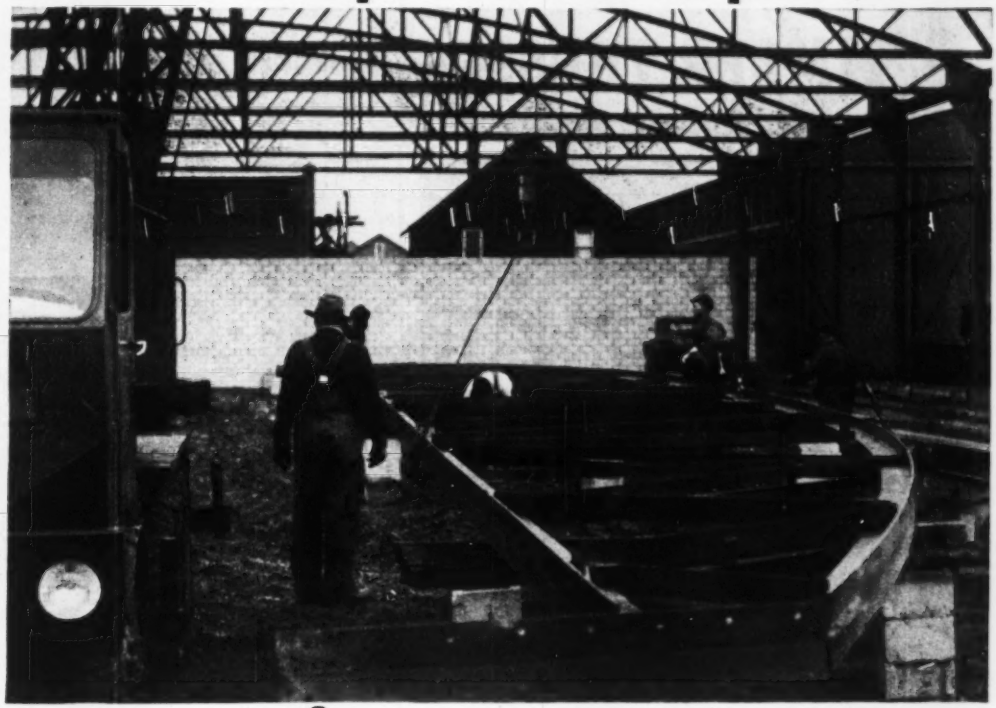

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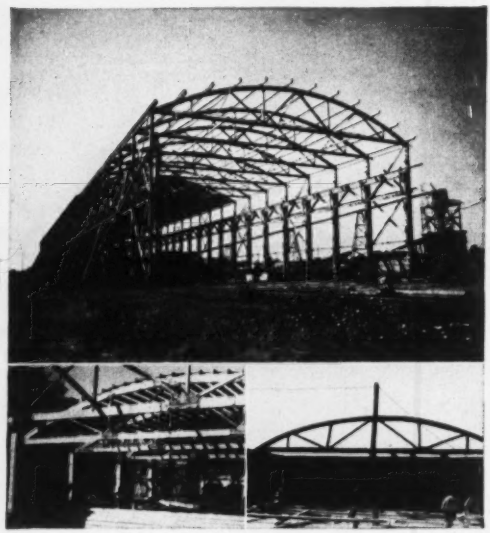

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OBITUARY

James H. McNeill, 77, retired civil engineer, died in Tampa, Fla., July 6.

Wm. A. Gray, for 30 years superintendent of the Marquette County, Mich., road commission, died July 7.

R. B. Steele, 68, geodetic engineer with the U. S. Geological survey, died July 13 in Arlington, Va. He was with the Engineers in World War I.

Charles E. Dearborn, 70, civil engineer for the town of Ashland, Mass., died July 18.

William H. Pritchard, 61, from 1922 to 1936 assistant city engineer of Utica, N. Y., died there July 10. He had been draftsman in charge of maps in the office of the Oneida County clerk.

Arthur L. Webster, 73, former city engineer of Wheaton, Ill., died there July 8. He was a civil engineer who helped develop much of Du Page County as residential areas. In 1908 he began a 20-year career as county surveyor. Later Mr. Webster served also as county superintendent of highways and as chief engineer of the Wheaton sanitary district.

Thos. D. Russell, Sr., 71, who retired in 1950 as senior associate highways engineer in Baltimore, Md., died there July 11.

Frank E. Weaver, 76, former Hamilton, Ohio, city engineer, died July 6.

John P. Boesche, 61, hydraulic engineer of the Kansas City district, Corps of Engineers, died at Kansas City, Mo., recently.

Charles F. Crowley, 68, former commissioner of public works of Troy, N. Y., died there July 18. He was a member of the Charles Crowley Construction Company. Graduated from Rensselaer Polytechnic Institute in 1906, he was appointed commissioner of public works of Troy in 1912 and served until 1920. He returned to the same post for four more years in 1924. He later was named city engineer until his retirement in January, 1950.

Raymond W. Broomall, 54, president of Broomall Construction Co., erecting engineers, died July 11 at Salem, Ohio. The firm was founded in the early 1800's, and conducted its business in Ohio, West Virginia and Pennsylvania.

LABOR

Set up wage-control enforcement body

In a sharp break with practise by its predecessor organization, the Wage Stabilization Board has set up a three-member enforcement commission to impose penalties on violators of the wage-control provisions. This commission—unlike World War II days—will be composed of persons not connected with WSB, and all representing the public.

A further break with tradition is the fact that the new agency will be headed by a woman. She is Miss Helen Humphrey, a career government attorney, has been associate counsel at the Economic Stabilization Agency, in charge of enforcement, and previously chief law officer at various regional offices of the National Labor Relations Board.

The War Labor Board will have nothing to do with anything but a tripartite enforcement group, but WSB chairman George W. Taylor thinks an all-public board will lessen the tendency to "bargain" for a settlement.

• **Lots of work**—It will be weeks yet before the new enforcement commission gets down to work. But several thousand complaints of violation of wage-increase registrictions are being investigated by WSB's enforcement division, which investigates and prosecutes such cases before the commission sitting as a court.

By this procedure, incidentally, WSB hopes to escape the onus of being prosecutor, judge and jury—as was the case with the NLRB under the Taft-Hartley Act.

Up to now, most of the complaints have come to WSB from competitors and disgruntled employees, but investigators expect to turn up most violations by routine checks of payroll records. WSB estimates that within a year, the records of one out of every ten employers will have been checked. Most of the complaints to date involve construction, shipbuilding and tool and dye industries, and stem from manpower shortages.

• **Go easy**—WSB admits that most of the complaints it investigates are groundless.

Where it finds convincing evidence of violation, it will ask the employer to correct the condition, and if necessary can seek an injunction.

However, before penalties are imposed—even with the aquiescence of an employer, the facts must be given to the new commission.

Most violations will be handled through regional enforcement commissions in WSB's 14 offices, with right of appeal to national commission.

• **But a big stick**—The national commission, besides determining whether an employer is in violation, also determines how much of the total wages paid in violation shall be disallowed for various purposes (such as income tax); and the commission will decide on penalties.

Additionally, it has authority to recommend denial of priorities and allocations of scarce materials.

There are criminal penalties too—$10,000 fine and one year in jail for wilful violators (both employer and employee).

See construction industry exempted from elections

It became a real possibility this week that Congress will drop union shop elections from the Taft-Hartley labor law. Lawmakers may even exempt the construction industry from union representation elections as well.

The reason for increased optimism is agreement between Sen. Robert A. Taft and Sen. Hubert Humphrey on the steps that should be taken. Taft is the leader of the Republican wing on labor legislation. Humphrey, a Democrat and ardently pro-labor, heads the Senate Subcommittee on Labor-Management Relations.

Taft and Humphrey have joined in a bill that would dispense with future union shop elections and validate the 5,000 union shop contracts which the National Labor Relations Board has found to be illegal because of a recent Supreme Court decision reversing previous NLRB policy (ENR July 26, p. 62). It would retain, however, the conduct of elections to remove an existing union shop contract if 30 percent employed covered petition.

While validating the union shop contracts, the Taft-Humphrey bill also would protect from any liability any person who failed to honor any election or certificate made before compliance by the AFL on Nov. 7, 1947, and by the CIO on Dec. 22, 1949. The bill validates certifications of unions as well as union shop polls.

Another Taft-Humphrey bill, in the drafting stage, would exempt the construction industry from bargaining elections, too. NLRB has found the holding of employee polls in the industry impractical.

(*Continued on page 60*)

STOP

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FOR PRESSURE LEAKS
(SIKA No. 2, SIKA No. 4A) Leaks are easily sealed on the exposed side with quick-setting SIKA mortar. It is not necessary to relieve pressure. SIKA No. 2 is used against heavy pressure or bleeders, SIKA No. 4A against seepage or moderate pressure.

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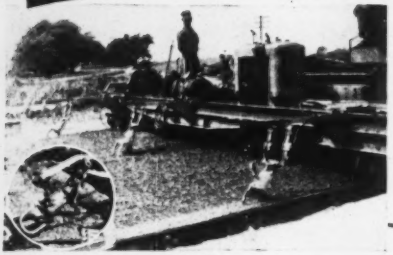

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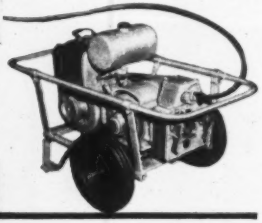

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Labor . . .

Union wage scales up for construction

Hourly wage scales of union construction trade workers advanced 2% during the second quarter of 1951, compared to an increase of .8% in the preceding three-month quarter the Bureau of Labor Statistics has found.

BLS estimated that the average hourly wage scale of union workers in the construction trades as of July 2, 1951, was $2.43—five cents above the level of April 2, 1951, and 22 cents above the level for January 3, 1951.

Higher pay scales affected slightly over two-fifths of the 543,000 workers covered in the BLS survey. Reflecting in part the fact that contract reopenings are concentrated in the spring and summer, local scale increases were widespread in the quarter ending July 2. Most of the negotiated advances effective during the quarter ranged from 7 to 15 cents an hour, although one out of every nine was for 5 cents or less; and one out of nine provided for 25 cents or more.

Carpenters showed the greatest gain, with advances averaging 6 cents; electricians advanced 5.2 cents, and bricklayers 4.4 cents.

Labor Briefs . . .

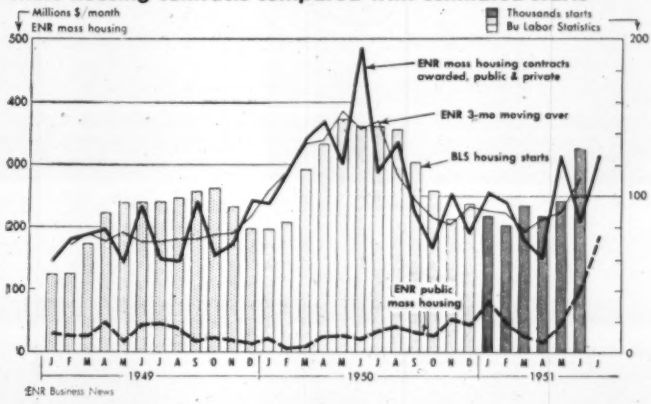
• **Fix Penna. rates**—Four AFL building trades unions and the Associated Pennsylvania Constructors have signed agreements fixing wage schedules for 29 eastern and central counties for highway and heavy construction work. Hourly rates for carpenters will range between $2 and $2.15; $1.25 to $1.40 for truck drivers; $1.12 and $1.22 for laborers.

• **Both stop**—NLRB has ordered Hunkin-Conkey Construction Co., Cleveland, to cease encouraging membership in the AFL Operating Engineers union, and at the same time ordered the union to stop causing the company to discriminate against employees. Company and union had been charged with unfair labor practices over the dismissal of S. L. Lightfoot, an employee, who NLRB ordered reinstated.

• **Smoke problem** — Electricians employed by a subcontractor on the rehabilitation of the Sunflower Ordnance Works, in Kansas, recently quit, because there were no "safe areas" provided where they might go for a smoke at their own discretion. Army regulations provide 15 minutes per day—morning and afternoon—for smoking in "safe areas" but no more than that.

CONSTRUCTION BUSINESS

Mass housing contracts compared with estimated starts



ENR Business News

Housing starts to rise in July, August

Housing starts—rather disconcertingly (to government planners) high in June—will continue at a high rate through August, according to Engineering News-Record's tabulation of contracts let. After August, however, the letdown may be sharp.

A study of ENR's housing figures—part of this journal's regular reporting of all types of contracts let—indicates that these figures present a reasonable forecast of housing starts to follow. This forecast is normally a month or so ahead of such reports as the U. S. Bureau of Labor Statistics' housing-unit-starts reports. The degree of change may not be of the same order, however, since ENR reports contracts in dollars, while starts are covered as actual units.

• **Big August**—On this forecast basis, a high level of housing starts for August is indicated in the $396 million contracts (including public and private) reported for July. That figure was 50% more than for June, and only slightly below the $415 million reported for May—highest since June, 1950.

The big contract letting in July was largely the result of the rush of public authorities to get their projects under contract before an expected Congressional shut-down (ENR Aug. 2, p. 75). ENR statisticians estimated that $187 million of the July total—nearly 60%—was accounted for by public projects. Incidentally, this was the first time in at least three years that more contracts were let for public than for private housing in any one month.

(This new relationship, observers commented, is due to two temporary developments—the rush to beat possible restrictions; and the fact that the Public Housing Administration backed the sale in July of $171 million in new housing authority bonds (ENR June 28, p. 67). Some $63 million of that money will go for new construction, while the balance will retire obligations issued by local authorities to finance projects already started.)

• **Small September?**—With all indications pointing to a sharp slackening in public housing the prospect is that contracts let during August will be lower—thus forecasting a smaller number of starts in September, and probably decreasing starts for the remainder of the year.

In the last three weeks, ENR's totals for new contracts for public housing dropped off sharply: During the last half of July they were less than half the volume registered in the first half.

With public housing weakening, and continuing strictures (through credit and other controls) on private housing construction, the forecast is for a drop. Private residential construction is now running at about 46% below 1950 pace.

Garrison Dam closure bids due in September

Bids on closure and diversion of the Missouri River—biggest single earth-moving phase in the construction of Garrison Dam near Bismarck, S. D., will be opened about Sept. 25, Army Engineers said Monday.

A formal call for bids on the job—designated as Stage IV and due for completion early in 1954—will be issued about August 15. The stage will involve excavation of 25 million cu yd of earth; placement of 19 million cu yd of embankment; 280,000 cu yd of riprap, and 70,000 ft of steel sheet piling. Also included are salvaging of lignite and rock, drainage work, installation of test apparatus, and removal of an existing bridge.

Construction, building costs hold steady

For the third month in succession, costs of construction showed virtually no change as August began, according to Engineering News-Record's Construction Cost and Building Cost indexes.

For August (see also p. 17 and 19 this issue) the Construction Cost Index stands at 542.78—a rise of only 0.07% over July. The Building Cost Index stands at 400.07—a drop of 0.07% under July. Both figures are higher than for corresponding month of 1950, but by relatively small percentages: Construction Cost is up 4.1% over 1950; Building Cost is up 4.4%.

• **Factors**—Two factors were significant in the figures, as they have been for the past three months: Steady drops in overall prices of lumber, and slow, fractional rises in labor rates.

Lumber, reflecting continuing high production against slowly falling demand (ENR July 5, p. 84) fell again for August. ENR's 20-cities' average showed 2 x 4 Fir at $105.235 per Mfbm, a drop of .9% from July and down 2.1% from August 1950. Pine 2 x 4 was quoted at $90.55 per Mfbm, a fall of .7% from July, but up 1.3% over August, 1950.

Other materials factors in the index—bulk cement and structural steel—showed no changes on the average.

Common and skilled labor, however, went up for the month—although the changes were slight, percentage-wise. Common labor, quoted at $1.637 an hour, was up .4% over July and up 4.8% over August, 1950. Skilled labor, at $2.701, was up .4%.

• **Other details**—Two other cost factors (not, however, included in index calculations) showed drops for the month. These were: Common brick, quoted at $31.001 per M, a drop of .7% under July; and ready-mixed concrete, at $10.885 per cu yd, was down .3% under July.

All five labor categories reported by ENR's staff, showed rises. In addition

(*Continued on page 62*)

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- **LESS COST**—Can be reused indefinitely year after year without repair. Contractors report 400 uses and more. Interchangeable steel forms for slabs, walls, circular tanks, tunnels, manholes, modular structures.
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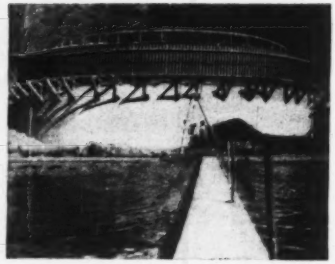
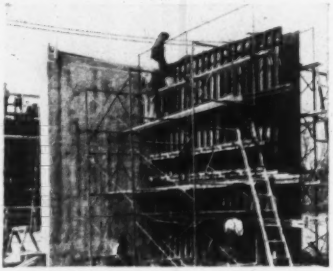


Speed forms as used on circular tank 80'-0" I.D. by 21'-0" high poured in three lifts of one set 8' forms. Water Supply System, St. Johnsville, N. Y., Morrell Vrooman Engineer, Weber Const. Co., Contractor.



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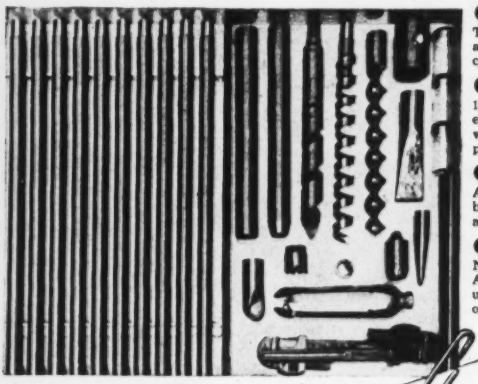

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Construction business . . .

to common and skilled labor, these rates were: Bricklayers, at $2.972 per hour, up .5%; structural ironworkers, at $2.659, up .5%; and carpenters, at $2.473, up .3%.

• **Changes slight**—The detailed reports gathered for this journal's monthly pulse-taking of the industry, showed that six of the 20 cities—Atlanta, Kansas City, Minneapolis, New Orleans, Philadelphia and Seattle registered no significant changes in any of the prices covered.

Most of the other cities showed changes in labor prices, with major significant changes largely in the lumber categories.

In lumber, for example, Baltimore reported drops in Pine ranging from $2.00 to $5.00, and in Fir from $2.00 to $3.00; in Boston, Pine went down from $1.00 to $4.00; Los Angeles said Fir prices dropped very sharply—from $8.00 to $18.00; New York lumber price drops ranged (both Fir and Pine) from $1.00 to $5.00; and San Francisco lumber prices fell from $1.00 to $12.00.

Running counter to this trend, however, were Cleveland and Chicago. In Cleveland, pine prices went up from $2.00 to $6.00; and in Chicago, pine prices mounted from $4.00 to $5.00 per Mfbm.

Plan further test of Ohio housing law

A friendly suit intended to clear up ambiguities surrounding Ohio's slum clearance laws is being planned by officials of several cities, in an attempt to clear the way for further public housing projects.

Present confusion in the state results from a web of legal technicalities which climaxed in a split state Supreme Court decision two weeks ago (ENR July 26 p. 30) which officially upheld the law, but in effect nullified it. Result of the decision has been to halt all public housing in the state because tax exemption (required for federal participation) probably cannot be obtained.

State legislators in 1943 sought to get around statutes that prohibited tax exemption with a special amendment to the state laws. Legality of that amendment was clouded, however, when the state Supreme Court two weeks ago upheld the law in a peculiar split decision—five of the seven justices voting against the law, two for it. Under the state constitution, at least six of the justices must vote against the law before it is wiped off the books. The split decision left plenty of fog around the law—and held up

further housing work until it is cleared away.

With the fate of some 19,720 housing units resting in the balance, officials of a number of cities are now considering bringing the case before the state high court again, to get a clear-cut answer.

FNMA rushes to aid defense housing plans

The Federal National Mortgage Association—better known as Fannie Mae—has cut down its buying and selling of the ordinary kind of government-insured mortgages, and is now concentrating on housing for the military and in critical defense areas.

Result is that mortgage money will be diverted in increasing volume to emergency projects, while less urgent housing will have to get along on what's left. The switch in direction was forecast weeks ago (ENR July 19, p. 102) when federal housing officials directed Fannie Mae to look to the defense housing picture.

Fannie Mae has set aside $350 million for emergency facilities programmed by the government. All types of housing are eligible: Single-family houses, apartments, garden-type developments, both private and rental. Mortgages on close to 10,000 units have been or still are being processed for purchase, many more will be processed later, when such projects as the AEC's Savannah River plant get into gear.

Business Briefs . . .

• **Fabricated steel bookings drop**—June bookings of fabricated structural steel totalled 207,966 tons—a drop of 22% below the previous month, but 6% greater than the same month in the average years of 1947-1950, the American Institute of Steel Construction reports. Shipments, however reached a new high—257,066 tons, the highest reported this year.

• **Maple flooring output**—Output of Northern Hard Maple and Birch flooring totalled 34,130,000 ft for the first half of 1951—23% above the first half of 1950, the Maple Flooring Manufacturers' Association reports.

• **OK negotiated Army contract**—Because the low bid was more than 25% above estimates, the Portland District, Corps of Engineers, has received authority to negotiate a contract for construction of Big Cliff Dam and completion of Detroit Dam on the North Santiam River in Oregon. Low bid was $7,397,547, and negotiation was authorized to save construction time.

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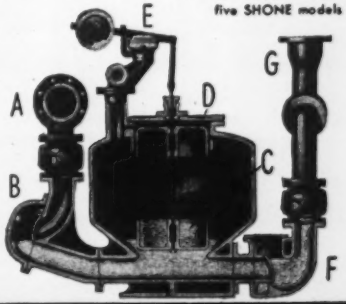

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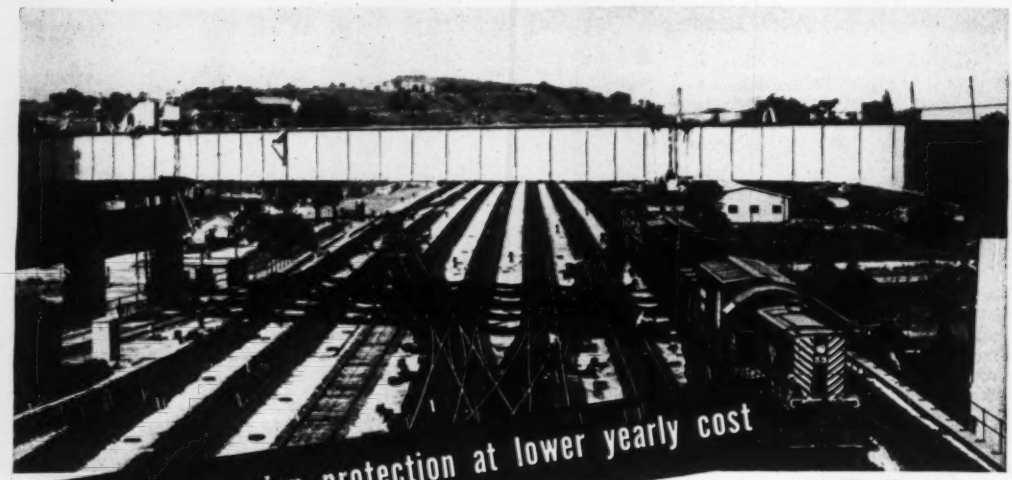

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The following organizations are set up to provide positive corrosion protection at lower annual cost in accordance with Metco* System specifications. For further information, or a copy of descriptive bulletin, contact the one nearest you.

Metco System contractors

New Orleans 13, Louisiana **GULF ENGINEERING CO., INC.** 1000 South Peters Street Tel. Canal 4421	**Newport Beach, California** **CLARK METALLIZING, INC.** 506—30th Street Tel. Harbor 2509	**Barberton, Ohio** **AKRON SAND BLAST CO.** 50 E. Springfield Rd. Tel. Plaza 3412	**Buffalo 1, N. Y.** **METAL-CLADDING, INC.** Lakeview & Porter Avenues Tel. Elmwood 9536
Lincoln Pk. 25 (Detroit), Mich. **DIX ENGINEERING CO., INC.** 1417 Dix Road Tel. Dunkirk 1-8822	**Philadelphia 29, Pa.** **METALWELD, INC.** Fox & Hunting Park Ave. Tel. Radcliff 5-3471	**St. Louis, Missouri** **NOOTER CORPORATION** 1420 South Second Street Tel. Main 6000	**Brooklyn, N. Y.** **ARTHUR TICKLE ENGINEERING WORKS, INC.** 21 Delevan Street Tel. Main 5-4200	**Houston, Texas** **F. W. GARTNER CO.** 3805 Lamar Avenue Tel. Atwood 5338

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
September Materials, and Labor Prices will appear in September 6, 1951 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over 50 c.y., del.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand gray	Lt. wgt. agg.	
Atlanta	$3.76	$3.45	3.25	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.191	$0.191	$11.50
Baltimore	3.68	3.37	3.33	2.50‡a	2.50‡a	2.00‡a	2.70‡a	2.80‡a	2.60‡a	2.55‡a	.17	.17a	10.80
Birmingham	3.11	2.68	2.82g	2.24n	2.24n	1.94n	2.50	2.50	1.10	1.30	.163	.163	7.85
Boston	3.96	3.65	3.58	2.50a	2.50a	2.50a	1.50a	1.60a	....	....	.206	.22a	11.50h
Chicago	3.29	2.99	3.94	3.00‡b	3.00‡b	3.40‡b	3.00‡b	3.00‡b	2.00‡	2.00‡	.22	.22b	11.50
Cincinnati	3.46	3.18	3.16	2.00‡c	2.00‡c	2.05‡c	2.35‡A	2.35‡A	....	....	.21	.225a	10.95f
Cleveland	N. A. in C. L.		....	2.05ef	1.85f	1.65	3.65a	3.65a	2.85‡	2.85‡	....	.23	13.00g
Dallas	2.95	2.65	2.70	2.15	2.15	1.84	2.22	2.38	....	....	.125e	.215	9.30
Denver	3.89	3.64	3.89	1.85	2.00	1.20	....	....	....	....	.22	.255e	10.10
Detroit	3.25f	2.98	3.04	4.00‡b	4.30‡b	3.50‡b	4.00‡	4.00‡	4.00‡	4.00‡	.19	.20a	10.55f
Kansas City	3.30	3.03	3.15	1.90‡	1.90‡	1.50a	1.90‡a	1.90‡a	....	....	.23ag	.23/.24e	10.95h
Los Angeles	4.00g	3.52n	4.72	1.95a	2.20a	1.95a	2.08a	2.08a	....	....	.11f	.22	10.00hm
Minneapolis	3.68cd	3.37cd	3.33	2.30‡ag	2.30‡ag	1.35‡ag	2.22	2.38	....	....	.23ak	....	11.25fi
Montreal	2.66ac	2.51ac	....	2.50	2.50	2.00i	1.05ij	1.30ij	....	....	.28	.20a	9.95ak
New Orleans	3.20e	2.90e	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.90
New York	3.78	3.48	3.35	2.35bk	2.35bk	1.60bk	2.50bl	2.50bl	....	....	....	....	11.40an
Philadelphia	3.38/3.68‡	3.07/3.37‡	3.38‡	2.65‡	2.75‡	2.15‡	2.10‡	2.15‡	1.75	1.65	.22/.25	....	11.50
Pittsburgh	3.32	3.04	3.32	2.15‡	2.15‡	2.10‡	2.60‡	2.60‡	2.15	2.15	.23d	.23d	11.00
St. Louis	3.32/3.42b	2.94/3.10b	3.22	2.70am	2.70am	2.30/2.70am	1.70ij	1.70ij	1.25	1.25	.215	.27cs	10.40
San Francisco	3.35	2.95	....	1.88	1.88	1.98	1.98	....	....	....	....	.22cl	10.30e
Seattle	3.80a	3.25a	3.85	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	....	....	.24j	.3325j	10.95j

‡ Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: a Subj. to 10¢ dis. b Less 2% for cash. c CL price dealers' comm. not incl. d Dealers sell only LCL. e Plus switching charges. f Paying up to $3.80 for cement brought in from outside sources. g Warehouse pickup.
SAND, GRAVEL, STONE & SLAG: a Truck lots. b Per cu. yd. c 5 tons or more. e ¼". f Pea gravel. g Less 5% for cash. h Less than 5 tons. i Sales tax incl. j F.o.b. quarry. k Barge lots and. l F.o.b. scow Hudson river. m Less 2% for cash. n F.o.b. cars.
CONCRETE BLOCK: a Cinder. b Waylite. c Haydite. d Celocrete e 5‡ x 8 x 12 in. f 8 x 4 x 16. g F.o.b. truck at job. i Less 2% for cash. j Less 1% for cash. k 8x8x18. l F.o.b. plant San Rafael.
READY MIXED CONCRETE: a 5 cu. yds. or over del. Man. b 25 cu. yds. or more. c 10–100 cu. brackets. e 2,000 lb. coner. f 2500 lb. comp. g Aver. haul 7–9 mi. zone. h Less 50¢ for cash. i 5% off for cash. j 2% off for cash. k Sales tax included. l 1:2½:4. m F.o.b. yard. n Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.60†	Buffington, Ind.	$2.55†	Steelton, Minn.	$2.65†	Muskegon, Mich.	$2.70†	Toledo, O.	$2.60†
Clinchfield, Ga.	2.60†	Independence, Kan.	2.50†	Leeds, Ala.	2.45†	Saginaw, Mich.	2.60†	Milwaukee, Wis.	2.75†
Kingsport, Tenn.	2.60†	Hannibal, Mo.	2.55†	Duluth, Minn.	2.65†	Wyandotte, Mich.	2.60†	Green Bay, Wis.	2.75†
West Des Moines, Iowa	2.65†	Northampton, Pa.	2.60†	Hudson, N. Y.	2.60†	Buffalo, N. Y.	2.60†	Ironton, O.	2.60†
Nazareth Pa.	2.60†	Universal, Pa.	2.65†	Alpena, Mich.	2.50†	Oswego, N. Y.	2.75†	Montreal City	2.31
Bath, Pa.	2.60†	Waco, Tex. (+ 10¢ tax)	2.50†	Detroit, Mich.	2.60†	Cleveland, O.	2.60†	W. Winfield, Pa.	2.65†

†*Prices to hold for third quarter of* 1951.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal.	ASPHALT EMULSION (Quick-breaking) Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in., carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	....	....	.....	.....	.....	.....	.....	.....	.....
Baltimore	150.00‡	57.70‡	.....	$22.00	.....	$.0809	$0.15	$.09w	$.17w	$.09s	$.09	$0.12
Birmingham	.....	45.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	$35.50a	22.00n	35.50w	.105a	.22	.09a	.105	.22
Chicago	155.00‡	90.00‡b	4.40/4.60‡f	20.25b	30.25b	19.25bw	29.25bw	.0875bw	.16w	.075b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	180.00	55.00d	4.12g	23.00A	....	23.00A	....	.1025Aw	.194w	.11A	.19A
Dallas	e	40.00	e	23.95	42.99	.1012	.1898	26.99	47.77	.0987	.1062	.1423
Denver	.....	48.00	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	92.00	.....	26.45	....	26.45w	.....	.117w	.....	.0925	.....	.215
Kansas City	e	e	e	18.55el	...	.....	.....	.075ew	.....	.043e	.....	.....
Los Angeles	e	.....	e	15.50dmz	....	15.50dnz	....	17.00dz	.....	16.00dz	.082B	.1525j
Minneapolis	.....	.....	2.83A	23.90B	.....	22.90B	.....	.0994Bw	.....	.894B	.03B	.....
Montreal	137.00	e	e	27.00n	36.65n	.135n	.183n	16.30nu	18.80nu	.132n	.187ns5	.229ns
New Orleans	.....	.....	.....	17.50g	....o	17.50w	.....o	.085ew	.....o	.0882	.085	.....
New York	.....	.....	3.12f	25.50	28.02g	24.50w	44.04qw	.1040w	.1819qw	.1040	.1040	.1847g
Philadelphia	175.00	110.00	4.06	22.00	....	.....	.....	.095w	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	23.00	37.00	.10	.20	27.00	39.00	.095	.09	.20
St. Louis	.....	.....	.....	19.25f	.....	.1698	.....	.0865/.089w	.....	.13	.....	.....
San Francisco	.....	.....	.....	17.00g	32.50gp	17.00gkw	32.50g	19.00g	36.50g	17.50w	.085y	.....
Seattle	.....	.....	.....	17.00A	37.50A	16.25Aw	.....	19.50A	.....	18.50Aw	.095A	.105A

‡ Delivered.
PAVING BRICK & BLOCK: a CL. b 3½ x 4 x 8½. c 2½ x 8½ x 4. d LCL, truck deliveries. e Not used. f 2" interior 6¢ treat. g 3". h 8¢ treat. i 3 x 3½ x 8½.
ASPHALTS: a Price at plant, Everett, Mass. b F.o.b. refinery, Lockport, Ill. c F.o.b. Sugar Creek, Mo. d F.o.b. refinery, El Segunda. e F.o.b. Baton Rouge. f F.o.b. Wood River or Roxana, Ill. g F.o.b. Richmond, Calif. h F.o.b. Martines. i Bulk refinery. j F.o.b. refinery, Englewood, Calif. k 50–110 penetr. l Less than 100 penetr. m 40–80 penetr. n Tax incl. o Drums not avail. p Shipped in steel bbl. q Used drums. r In customer's drums. s Shipped in drums, per drum. u Per 100 gal. v Per ton. w Per gal. x Also tank trucks. y F.o.b. Oakland. A. F.o.b. refinery Cleveland. B. July prices same as Aug.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton: Standard	Light	Re-rolled	TRACK SUPPLIES: Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.65	$3.70	$3.70	$7.85		$72.00	$80.00	Not	$4.70	$6.15	$4.50	....
Chicago Area	3.65	3.70	3.70	7.85	$4.45	72.00	80.00	avail-	4.70	6.15	4.50	....
Pittsburgh Area	3.65	3.70	3.70	7.85	4.45	72.00	80.00	able	4.70	6.15	4.50	....
Buffalo Area	3.70	3.70	3.70	7.75	4.45	72.00	80.00	....	4.70	6.15	4.50	$9.85
Cleveland	....	....	3.70	7.85	....	....	....	....	....	....	....	9.85
Youngstown Area	....	....	3.70	....	....	....	....	....	....	6.15	....	....
Geneva	3.65	3.70	....	....	....	....	....	....	....	....	....	....
Los Angeles	....	....	4.40	....	....	....	....	....	....	6.15	....	....
Pueblo	3.65	3.70	3.70	....	....	72.00	80.00	....	4.70	6.15	4.50	9.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price u: 5 tons to carload lot b New billet	Rail steel	Add switch	$/cwt for Del.	EXPANDED METAL LATH k Per 100 sq. yd., carload lots: Std. diamond mesh. 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING d Per 100 sq. ft., carload lots: 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$6.80	$6.65	$6.65	$.025	$.10	$31.50	$31.50			
Baltimore	6.54	5.49l	....	....	.10	42.00	45.00			
Birmingham	5.70	5.75	5.75	.05	.15	47.00p	52.00p			
Boston	6.20qk	6.19ek	6.19ek	....	.15	40.50	44.50			
Chicago	5.70	4.95ff	4.95ff	.0625	....	34.50‡	38.50‡			
Cincinnati	6.24ak	5.84r	....	....	....	38.50azee	41.50azee			
Cleveland	5.82	4.81e	....	....	.10	37.00‡	40.00‡			
Dallas	8.85	7.00	7.00	....	....	49.00	52.00			
Denver	7.20	7.10c	....	....	....	60.00s	72.00ys			
Detroit	6.09	5.59n	....	....	.10	53.00	58.00			
Kansas City	6.30nn	5.90t	....	....	....	39.50	41.50			
Los Angeles	6.45hh	6.15x	....	....	.15	48.00	54.00kk			
Minneapolis	6.16hh	7.32ll	7.32ll	....	.30	37.00	40.00			
Montreal	6.75i	4.75v	4.75g	....	....	57.00hh	59.00h			
New Orleans	....	5.55ok	....	.05	.10	40.00	40.00			
New York	6.30r	6.25	6.25	....	.30	38.50at	45.00at			
Philadelphia	5.90k	5.95k	....	....	....	38.00‡	42.00‡			
Pittsburgh	5.40/5.60	5.40/5.60	....	....	.10	34.00	36.00			
St. Louis	6.03a	5.34c	5.34c	....	....	47.00aa	53.00aa			
San Francisco	7.15ni	5.75l	....	....	.15	40.50	43.50			
Seattle	4.30e	5.55ol	....	....	....	57.00mm	47.00mmx			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.66 — Fo.b. Mill: Monessen, Penn., $2.76

A.P.M.* Joliet, Illinois, Donora, Penn., $1.87 — Fo.b. Mill: Monessen, Penn., $1.93

A.P.M.* Joliet, Illinois, Donora, Penn., $2.79 — Fo.b. Mill: Monessen, Penn., $2.89

‡ Delivered. b 1–5 tons, add 35¢. Less than 1 ton, add 50¢. c 20 tons or over base. d Mill price plus freight. e F.o.b. plant. f Includes delivery in free delivery zone. g 10,000 to 39,999 lbs. h List price. Dominion tax exempt. Provincial and Municipal tax extra. i Plus Dominion, Provincial and Municipal sales tax. j Price per ton. k F.o.b. city. l Intermediate and hard grade, new billet. m Per sq.yd. n 5–10 tons. o 5 to 15 tons base. p Del. of 500 sq. yd. or more. q Std. ribbed. 4 lb. per sq. yd. r 5 tons or over. s LCL. t Asphalt coated. u Note: Revised size extra — 1 in., 1¼ in., 1½ in., 10¢; ¾ in., ¼ in., 15¢, ⅝ in., 25¢; ½ in., 30¢; ⅜ in. 80¢; ¼ in. $1.90. v 20 tons. Straight. w Copper bearing. x 2.5 lb. per sq. yd. y $0.0003 transportation tax included. z Copper alloy. aa Delivered truck to job. bb Contractor to do unloading. cc F.o.b. dock. dd F.o.b. cars. ee F.o.b. plant. ff Carload lots. gg Including sales. hh 10,000–19,999 lbs. ii Rolled at Geneva mill. jj 400–999 lbs. kk 1" ribbed. ll 5 to 8 tons, f.o.b. city. mm 2% off for cash. nn 1–5 tons. oo 10 tons to CL. aa 2000–9999 lbs.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in. a	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$99.00	$0.43	$0.67	$3.39pp	$7.00qq	$114.00	$140.00	$0.45	$2.00
Baltimore	109.00	.539	1.0395	4.234	11.275.4	178.20	274.80	.90	2.45
Birmingham	93.00	.42	.75	2.99	....	210.00‡	375.00‡	1.25m	2.75m
Boston	113.00	.56uvx	1.08uvy	4.41uvy	11.685uvy	187.80r	289.20r	1.55mg	3.80mg
Chicago	107.00	.65	1.25	5.10	13.50	150.00‡	270.00‡	.80	2.80
Cincinnati	106.00	.574	1.107	4.32	11.38	154.80	239.70	.75m	2.80m
Cleveland	108.00	.462z	.80z	3.69z	10.045z	158.00m	245.65m	.80m	3.00m
Dallas	107.00	.436	.822	3.234b	9.176	....	....	.49	1.60
Denver	115.00	.43dd	.74dd	3.18dd	....	....	....	.74m	2.50m
Detroit	108.00	.70	1.35	5.35	14.40	240.00m	360.00m	.80	3.20
Kansas City	106.00	.50	.88	3.50	....	216.70	....	.70	3.00j
Los Angeles	122.00	.54l	1.07l	5.24l	13.06l	228.20	348.90	.85	2.40ff
Minneapolis	102.86–112.00	.66mo	1.20mo	4.85mo	....	....	....	1.36h	3.87h
Montreal	100.00	.85z	1.50z	5.25z	....	....	....	106.50/kaa	282.70/khaa
New Orleans	101.50	.498	.905	5.03	....	229.70bb	402.00bb	.65	2.29
New York	111.00	.70	1.19	4.77	12.71	....	....	1.05	2.20
Philadelphia	110.00	.65	1.25	4.95.4	12.65.4	300.00‡	350.00‡	1.55h	3.75h
Pittsburgh	109.00	.386m	.752m	2.83m	7.622m	147.50	230.00	1.05h	2.50h
St. Louis	103.00	.51	.93	3.65	8.50	180.00	400.00	1.20il	2.85kl
San Francisco	122.00	.61d	1.20bf	5.03df	12.57d	240.00dll	400.00dll	.95	3.20
Seattle	124.00	.54b	.94b	....	....	150.00c	....	.88ee	2.64ee

‡ Delivered. a Class B & heavier. b Based on existing freight rates; subject to rate change. Gas pipe and class A $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually $1 per ton less. c Extra strength ASTM C 200-44T. d 4-in., $90. e 8S361-A. f 30-in. g Culvert pipe. Reinforced, ASTM C76-41. h Reinforced, ASTM C75-41. i Reinforced, ASTM C76-37. j Centrispun. k Per 100 ft. l F.o.b. plant. m Truck delivery. n Listed price is based on LCL (no minimum). o Less than 5 tons, per price per ft. t Within switching limits. u ASTM C13-40. v C.L. f.o.b. origin, freight allowed. x 2 ft. lengths. y 3 ft. lengths. z CESA A 60-1941 specifications used. aa No. standard specifications in Can. bb Freight allowed to destination in city. cc Truck loads; f.o.b. plant, Newton. dd LCL, delivered, f.o.b. truck. ee 1% off for cash. ff 21%. gg Extra strength ASTM C-200-50. A Standard strength.

***WROUGHT STEEL PIPE—(Full standard weight)**

	Black %	Galv. %	Lap Weld‡ Black %	Galv. %	Butt Weld‡ Black %	Galv. %
Atlanta	36.50	15.5a	38.5e	18.0e	43.5	22.0
Baltimore	33.5a	13.5a	35.5e	15.5a	43.5	24.0
Birmingham					41.5	23.0
Boston	36.50	15.5a	38.5e	18.0e	43.5	22.0
Chicago	33.5a	13.5a	35.5e	15.5a	43.5	24.0
Cincinnati					41.5	23.0
Cleveland	36.50	15.5a	38.5e	18.0e	43.5	22.0
Dallas	33.5a	13.5a	35.5e	15.5a	43.5	24.0
Denver					41.5	23.0
Detroit	36.50	15.5a	38.5e	18.0e	43.5	22.0
Kansas City	33.5a	13.5a	35.5e	15.5a	43.5	24.0
Los Angeles					41.5	23.0
Minneapolis	36.50	15.5a	38.5e	18.0e	43.5	22.0
Montreal	33.5a	13.5a	35.5e	15.5a	43.5	24.0
New Orleans					41.5	23.0
New York	36.50	15.5a	38.5e	18.0e	43.5	22.0
Philadelphia	33.5a	13.5a	35.5e	15.5a	43.5	24.0
Pittsburgh					41.5	23.0
St. Louis	36.50	15.5a	38.5e	18.0e	43.5	22.0
San Francisco	33.5a	13.5a	35.5e	15.5a	43.5	24.0
Seattle					41.5	23.0

Mill	2½ & 3 in. Butt Weld‡ Black %	Galv. %	3½ to 6 in. Lap Weld‡ Black %	Galv. %	7 & 8 in. Lap Weld‡ Black %	Galv. %	9 & 10 in. Lap Weld‡ Black %	Galv. %	11 & 12 in. Lap Weld‡ Black %	Galv. %
Lorain, Ohio	43.5	22.0	36.5	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Sharon, Pa.	43.5	22.0	36.5	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Sheffield, Pa.	43.5	24.0	36.5	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Sharpsville, Pa.	43.5	24.0	36.5	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Sparrows Pt., Md.	43.5	24.0	36.5	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Benwood, W. Va.	43.5	24.0	36.5	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Youngstown, O.	43.5	24.0	36.5	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Indiana Harbor, Ind.	43.5	24.0	36.5	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Fontana, Calif.	43.5b	24.0b	36.5b	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Etna, Pa.	43.5b	24.0b	36.5b	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a
Torrance, Calif.	43.5b	24.0b	36.5b	15.5a	38.5a	17.5a	38.5a	17.5a	38.5a	17.5a

‡ Threaded and coupled. a 3½ to 4 in. b Continuous weld. c 5 and 6 in.

*WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ⅛ in., 5½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld:* 3½ in., 92¢; 4 in., $1.09. 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base. *Butt Weld* — 1 in. and 1¼ in. black, + 20.0, galv. + 48.0; 1½ in. black, + 14.0 galv. + 44.5; 2 in. black, 4 galv. + 34.5. *Lap Weld* — 2½ in. to 3½ in. black + 20.5, galv. + 47.5; 4½ in. to 8 in. black + 17.5, galv. + 43.0. Freight rates to destination to be added to name delivered price.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 - Lengths up to 20 ft.

(Prices in italics)

		1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	†	**$73.00**	**$76.00**	**$67.00**	**$69.00**	**$73.00**	**$76.00**	**$75.00**		
Baltimore	*	**88.50**	**92.50**	**70.00**	**75.00**	**80.00**	**85.00**	**95.00**		
		104.50g	*104.50g*	*98.50g*	*98.00g*	*99.00g*	*98.00g*	*112.50*	*$108.50*	*$108.50*
Birmingham	†	**83.00**	**83.00**	**70.00**	**80.00**	**83.00**	**85.00**	**95.00**		
		85.00	*85.00*	*75.00*	*80.00*	*80.00*	*79.00*	*85.00*	*85.00*	*85.00*
Boston		**97/100a**	**100/104a**	**95/99a**	**98/103a**	**103/106a**	**110.00a**			
	‡	*90/95*	*92.00*	*105.00*	*105.00*	*105.00*	*108.00*	*127.00*	*127.00*	*127.00*
Chicago	**	**96.00**	**100.00**	**95.00**	**96.00**	**96.00**	**100.00**	**105.00**		
		103.00	*103.00*	*98.00*	*106.00*	*106.00*	*106.00*	*110.00*	*110.00*	*110.00*
Cincinnati	*	**94.00**	**96.00**	**84.00**	**89.00**	**94.00**	**96.00**	**118.00**		
		112.00	*112.00*	*105.00*	*105.00*	*105.00*	*106.00*	*150.00*	*125.00*	*125.00*
Cleveland	**	**90.00**	**94.00**	**85.00**	**92.00**	**94.00**	**101.00**	*120.00*	*120.00*	*120.00*
Dallas	††	**78.00**	**80.00**	**69.00**	**58.00**	**59.00**	**59.00**	**98.00**		
Denver	*	*Not in stock*		*133.00*	*134.00*	*135.00*	*135.00*	*137.00*	*166.00*	*166.00*
Detroit	‡	**104.00**	**107.00**	**99.00**	**107.00**	**110.00**	**113.00**			
		103.00	*104.50*	*105.00*	*105.50*	*104.50*	*103.25*	*120.00*	*120.00*	*120.00*
Kansas City	*	**120.00**	**120.00**	**120.00**	**120.00**	**120.00**	**120.00**			
		120.00	*120.00*	*120.00*	*120.00*	*120.00*	*120.00*	*145.00*	*155.00*	*155.00*
Los Angeles	‡	*90.00*	*90.00*	*88.00*	*88.00*	*88.00*	*88.00*	*100.00*	*105.00*	*100.00*
Minneapolis	#	*130.00*	*130.00*	*130.00*	*130.00*	*130.00*	*130.00*	*160.00*	*150.00*	*150.00*
Montreal	ab	98.00	110.00	95.00	100.00	110.00	125.00			
		175.00	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*170.00*
New Orleans	†	**100.00**	**100.00**	**97.00**	**95.00**	**95.00**	**99.00**	**118.00**		
	†	*100.00*	*102.00*	*107.50*	*108.00*	*107.00*	*104.50*	*118.00*	*122.00*	*112.50*
New York	§	**100/105**	**109/112**	**95/100**	**102[m]/107[m]**	**107[m]/112[m]**	**112[m]/117[m]**	**150/160**		
				Range from $115.00 to $120.00				*155/150*	*145/150*	*145/150*
New York	**	**88.00**	**94.00**	**76.00**	**88.00**	**92.00**	**96.00**	**112.00**		
		100.00	*100.00*	*108.00*	*102.00*	*108.00*	*103.00*	*110.00*	*120.00*	*120.00*
Philadelphia				**Range from $117.00 to $127.00**				**117/127**		
				Range from $130.00 to $140.00				*130/140*	*140/150*	*140/150*
Pittsburgh	†			**Range from $85.00 to $90.00**			**90/100**	**90/105**		
				Range from $95.00 to $105.00			*95/105*	*105/120*	*140/150*	*140/150*
St. Louis	5c	**110.00e**	**114.50e**	**91.25/**	**109.50/**	**114.00e**	**120[m]/125d**			
				118.25e	*128.25e*	*128.25e*	*128.75e*	*155.00a*	*160.00*	*160.00*
San Francisco	A†	*65.00*	*65.00*	*69.00*	*68.00*	*68.00*	*67.00*	*67.00*	*75.00*	*75.00*
Seattle	†	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common. *h* 8 ft. lengths. *k* No. 3 common

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00

LONG LEAF Y. P.

Merchantable grade up to 20 ft.

	2x12 Rgh	12x12 Rgh
	$155.00	$155.00
	115.00	130.00
	134.00	134.00
	125.00	125.00
	108.00	98.00
	125.00	
	148.00	140.00
	210/240	210/240
	190/200	190/200
	95/100	110/120

PLYWOOD

Rail freight increment (See note for base price)

⅜"	¾"
$22.32	$27.24
22.86	27.90
21.78	26.58
22.86	27.90
18.72	22.80
21.78	26.58
22.20	27.12
18.72	22.80
13.92	16.98
21.78	26.58
16.56	20.16
13.38ab	16.26ab
16.56	20.16
18.72	22.80
22.86	27.90
22.86	27.90
22.56	27.48
18.72	22.80
10.08a	12.30a

per M ft bm. From Northern Calif. mills $9.00 by rail $12.00 by truck to yard with surfaced stock $2.00 to $3.00 less.

PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $204.00; on ½", $231.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

* Freight rate increase of 6¢ per cwt., not included in these figures.

GLASS, EXPLOSIVES, CHEMICALS

WINDOW GLASS

Discounts from jobbers list, Feb. 1, 1950*a*

Single or Double Thickness

	A quality	B quality
Atlanta	79%	80%
Baltimore	70–10%	78–10%
Birmingham	83%	83%
Boston	79–10%	79–10%
Chicago	78%*f*	78%*f*
Cincinnati	78%	78%
Cleveland	78–10–10%*f*	78–10–10*f*
Dallas	75%	75%
Denver	81–5%	81–5%
Detroit	78–10–10%	78–10–10%
Kansas City	80–10%	80–10%
Los Angeles	75%	80%
Minneapolis	78–10%	78–10%
Montreal	45–15%*bc*	45–15%*bc*
New Orleans	78%	77%
New York	82%*f*	82%*f*
Philadelphia	76%*f*	78%*f*
Pittsburgh	82%	82%
St. Louis	70–10%*e*	70–10%*e*
San Francisco	70%	76%
Seattle	75%	78%

EXPLOSIVES

Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*

Atlanta	$0.2275
Baltimore	.2275
Birmingham	.1750
Boston	.2275
Chicago	.2275
Cincinnati	.2275
Cleveland	.2675
Dallas	.2350
Denver	.2325
Detroit	.2275
Kansas City	.2325
Los Angeles	.23
Minneapolis	.2325
Montreal	20.00*hi*
New Orleans	.2325
New York	.38*g*
Philadelphia	.2275
Pittsburgh	.20
St. Louis	.2325
San Francisco	.2275
Seattle	.23

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass: a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *e* Discount from list of Jan. 16, 1946. *f* Disc from Oct. 1950.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $21.75. *i* F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.175	$0.2075	$0.2275
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.18 – .1875	.2125– .22	.2325– .24
Rocky Mtn. States	.18 – .1925	.2125– .22	.2325– .245
Pacific N. W. States	.1775– .19	.21 – .2225	.23 – .2425
Pacific S. W. States	.175 – .1825	.2075– .21	.2275– .2325

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.46	....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.50	..
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50/.60	....
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.70/.75	.85
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.75/.85	.86
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	....	.92
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	....	.94

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	....	....	....	....
	Pine	....	....	....	....
New York	S. L. Sap Pine	$2.10	$3.90	$3.00	$5.00
	Mixed Oak	2.65	4.20	3.25	5.50
Birmingham	Hardwood	2.00	3.13*a*	2.68	4.16*a*
Chicago	Red Oak	....	4.00*a*	....	5.00*a*
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.15/2.33	3.10/3.13*a*	3.00/3.10	4.15/4.25*a*
St. Louis	White Oak	2.88		3.57	
	Red Oak	2.78	3.43*a*	3.45	4.42*a*
	Sap Pine or Cypress	3.26*a*		4.17	
San Francisco	Douglas Fir	2.31*e*	3.35*ef*	3.03*bf*	4.40*cef*
Montreal	Birch or Maple	.... *h*	.... *h*	.... *h*	.... *h*

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *c* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$6.00
Chlorine cylinders, liquid, per lb. f.o.b. works	.0875
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	25.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.20
Soda ash, 58%, in paper bags, per 100 lb. dense	1.60
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.65
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8.95

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE			STRUCTURAL CLAY TILE — LOAD			BRICK		LIME		
	PARTITION — SCORED			BEARING — SCORED			Per M. in quantity		Per ton, In paper, Carload lot,		
	Per M. lots of 2,000 pieces or over,			Per M. lots of 2,000 pieces or over,			Common backing	Straight hard	Hydrated finishing	Common hydrated	Pulverized, or lump
	3x12x12 in.	4x12x12 in.	8x12x12 in.	8x12x12 in.	10x12x12 in.	12x12x12 in.					
Atlanta							$27.78	$27.78	$19.00	$17.50	$17.50
Baltimore	$180.00	$191.00	$358.00	$406.00	$530.00	$605.00	37.00‡	42.00‡	30.00	20.60	.....
Birmingham	118.00*p*	128.00*p*	236.00*p*	283.00*p*	.....	.....	23.50*ff*	28.00*gg*	26.37	17.10	.....
Boston	191.65†	204.40†	383.00†	383.25†	.....	.....	33.50*i*	36.50*i*	30.00†	28.00†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	21.00	23.00	30.80	26.00	.....
Cincinnati	185.00*j*	195.00*j*	340.00*jdd*	.....	.....	.....	34.00*j*	46.00*j*	26.00*j*	24.25*j*	
Cleveland	149.00**	156.00**	.....	.....	.....	.....	32.00	32.00	25.50	23.50	31.00*ee*
Dallas	.....	110.00	.....	.....	.....	.....	18.75	32.75	31.90	21.80	24.60*u*
Denver	.....	.....	.....	.....	.....	.....	34.00	40.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	118.18	126.08	236.40	.....	293.30	335.20	34.00*ee*	32.50*ee*	32.00	32.00	.....
Kansas City	115.50	122.50	245.00	245.00	303.50	367.00	26.00*o*	26.00*o*	30.50	24.50	27.00
Los Angeles	r	r	r	r	r	r	20.00§	.....	34.00	34.00	35.00
Minneapolis	171.50*p*	192.50*p*	386.00*p*	192.50*np*	.....	.....	32.00*ep*	36.00	37.00*bbe*	28.00*bbe*	38.00*bbde*
Montreal	150.00*aq*	162.50*au*	300.00*au*	.....	.....	.....	26.50	38.50	34.80	32.50	24.60*u*
New Orleans	170.00	170.00	310.00	.....	.....	.....	31.00	.....	.....	20.00	20.00
New York	121.60*AA*	129.70*AA*	178.30*eAA*	194.60*mA*	.....	.....	38.50	.....	38.00	32.00	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	455.74	29.00	32.00	36.00	21.50	.....
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	32.00	42.00*y*	25.00	23.00	2.97*m*
St. Louis	136.00*ee*	156.00*ee*	226.00*ee*	307.50*ee*	345.00*ee*	.....	40.00*al*	36.00*al*	.85*aaa*	.65*aaa*	1.10*aaapee*
San Francisco	156.85*v*	177.10*v*	235.30*ddq**	.....	.....	.....	37.00	.....	26.35	26.35	2.62*m*
Seattle	175.00*er*	190.00*e*	.....	190.00*eew*	.....	.....	39.00*a*	40.00*a*	37.50*aAA*	1.50*t*	3.90*mAA*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5% 10th following month. *g* 3½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *i* F.o.b. warehouse only. *j* Truck load or over. *k* $1.00 discount. *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed tile. *o* F.o.b. Buffalo. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5¼ x 8 x 11¼. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. *ii* F.o.b. plant. *jj* Per 60 lb sack; no incr., ton price no longer quoted. **Only 1 plant producing, quotes on warehouse delivery, previous quotes were truck deliv. * F.o.b. Stockton; A. Subj. to incr. not in excess of 10%.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD	WHITE LEAD	READY-MIXED PAINT			ROOFING SUPPLIES Carload lots f.o.b. factory				
	Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	Per 100 lb. in 100 lb. cases in oil *w*	Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb. †	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$20.75	$31.025	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	20.50	30.65	2.65	4.10	3.22	2.50	4.17	4.17	.42	37.00
Birmingham	20.75	31.025	3.90	3.40	.....	2.80	2.75	2.75	.....	40.50*ee*
Boston	20.50	30.65	.....	.....	.....	2.89*q*	2.79*o*	2.79*o*	.47	42.00
Chicago	20.50	30.65	..	.....	.....	2.73‡*u*	3.04‡*o*	3.04‡*o*	38.00‡*bbr*	43.00‡
Cincinnati	20.50	30.65	.....	.....	.....	2.50	2.50	2.50	.42*y*	42.36
Cleveland	20.50	30.65–	2.94*pqqA*	3.37*qqB*	2.80*C*	2.50*q*	2.50*o*	2.50*o*	.36*ff*	40.00*kk*
Dallas	20.75	31.40	.....	4.05	.....	3.50*q*	3.75*o*	4.35*o*	.36	46.00
Denver	21.00	31.15	2.96	4.50	2.86	3.25*o*	2.76*o*	2.76*o*	.47*ff*	42.00
Detroit	20.50	30.65	2.35	3.30	2.50	2.50	2.50*f*	2.50	.51	40.00
Kansas City	20.50	30.77	.....	2.71	2.65	2.39	2.43*o*	2.43*o*	.313	48.00
Los Angeles	20.50	30.90	3.30	4.50	4.20	2.97	3.01*e*	*l*	.44	*l*
Minneapolis	20.50	28.55/30.77	.....	.....	.....	2.50*hidd*	2.50*hidd*	2.50*hidd*	.34*idd*	37.00*r*
Montreal	.....	20.70	3.75*t*	4.20*t*	4.62*t*	3.80*t*	3.85*tf*	3.85*tf*	3.00*kt*	3.15*kt*
New York	20.50	30.65	3.45*y*	.....	.....	2.50	2.50*o*	2.50*o*	.34*z*	37.00
Philadelphia	20.50	30.65	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	20.50	30.65	2.45	2.55	2.20	2.90	2.90*o*	2.90*o*	.39	42.00
St. Louis	20.50	30.65	.....	.....	.....	2.50	2.50*h*	2.50*h*	.36*y*	38.00
San Francisco	20.50	30.90	2.40	3.40	.....	2.95	4.00*aa*	.....	.49	.....
Seattle	20.50	31.15	2.51*m*	2.67*m*	.....	3.58*mqcc*	3.05*hmcc*	.....	.59*mcc*	52.00*jmcc*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *t* Federal tax included. *u* Per 90 lb. square less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal drums. *gg* F.o.b. factory. *hh* Incl. freight. *A.* TTTP 27. *B.* TTA 468A. *C.* TTP 31A.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$2.50	$2.00	$2.25	$2.25	$2.50	$2.50	$2.35	$1.05	$1.05
Baltimore	3.20*v*	2.42	2.80	2.60/2.80	2.50	2.75	2.50	1.38	1.38
Birmingham	2.75	2.125	2.35	1.975	2.30	2.50	2.50	1.10	1.20
Boston	2.888	2.475	2.75	2.80	2.87	2.75	2.665	1.815	1.815
Chicago	2.825*kA*	2.70*A*	2.75*A*	2.65*A*	2.865*Ax*	2.835*n*	2.70	2.03*mA*	2.03*mA*
Cincinnati	2.84	2.475	2.665	1.825/2.85	2.67	2.70	2.64	1.65	1.65
Cleveland	2.70*r*	2.825*s*	2.825	2.75	2.825	2.825	2.825	2.10	1.85
Dallas	3.4375†	2.3375	2.50	2.475	3.125†	2.6125	2.6125	1.20	1.35
Denver	3.00	2.35	2.30	2.48	3.00	2.65	2.65	1.575	1.575
Detroit	2.85	2.60	2.85*m*	2.80	2.964†	2.85	2.75*m*	1.90†	1.90†
Kansas City	2.86	2.365	2.53	2.365/2.61	3.025	2.55	2.625	1.73	1.73
Los Angeles	2.75*B*	2.35	2.50	2.30	3.125	2.625	2.625	1.75	1.75
Minneapolis	2.65	2.33	2.50	2.28	2.75	2.645*n*	2.55	1.67	1.67
New Orleans	2.70	2.06	2.45	2.325	2.375	2.50	2.45	1.10	1.10
New York	3.548*r*	3.09*ln*	3.348*s*	3.348*o*	3.509*ar*	3.456*as*	3.286*p*	1.90	1.90
Philadelphia	3.314	2.65*A*	3.05*tA*	2.90	3.075*k*	3.03/3.283*u*	2.825*k*	1.51*A*	1.81*A*
Pittsburgh	3.00	2.75	2.75	2.825	2.75	2.75	2.80	1.70	1.70
St. Louis	3.09*	2.70*A*	2.75	2.76	2.875	2.6775*c*	2.625	1.77	1.77/1.80
San Francisco	3.256	2.45	2.70	2.41	3.00*u*	2.75	2.75	1.70	1.70
Seattle	3.30	2.42	2.57	2.50	3.00	2.65	2.75	1.97	1.95
Montreal*	1.75	1.55	1.65	1.45	1.75	1.65	1.70	1.09	1.03

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund for bricklayers; 2% for electricians. * Cost of living bonus now included in basic wage. *e* Includes 5¢ per hr. tool replacement. † Plus $5.00 daily bonus. *h* $2.37 homes and housing + 5¢ vacation fund. *i* Incl. 2% welfare. *j* Incl. 9¢/hr. welfare. *k* Incl. 7½ ¢/hr. welfare fund. *l* Incl. 4% vacation fund. *m* Incl. 5¢ hr. welfare ins. fund. *n* Incl. 6¢/hr. welfare fund. *o* Incl. 3% welfare fund. *p* Incl. 3% welfare fund and 3% pension fund. *r* Incl. 3% welfare fund and 20¢ pension fund. *s* Incl. 4% welfare and pension fund and 4% vacation fund. *u* Incl. 1% welfare fund. *t* Still negotiating. *v* Incl. 10¢ welfare fund. *A* Subject to W.S.B. approval. *B* Some contrs. paying 3.00 unofficially.

MEXICO CITY PRICES

In Pesos, F.o.b. City		June '51	July '51
Common Wages—Building (8 hr. day)	av. per hr.	68*	68*
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	75*	75*
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.88*	1.88*
Bricklayers (8 hr. day)	av. per hr.	1.88*	1.88*
Struct. Iron Workers (8 hr. day)	av. per hr.	1.05*	1.25*
Struct. Steel Shapes 3"-15" x 12 meters	per metric ton	1,111.01	1111.01
Reinf. Steel, Corr. Rods ⅜" x 11 meters	per ton	1,261.51	1261.51
½" x 11 meters	per ton	1,251.13	1251.13
⅝" x 11 meters	per ton	1,240.75	1240.75
¾" x 11 meters	per ton	1,230.37	1230.37
⅞" x 11 meters	per ton	1,230.37	1230.37
1" x 11 meters	per ton	1,230.37	1230.37
Gravel truck load of 3½ cu. meters Blue Gravel	per tr. load	42.00	45.00
Rose Gravel	per tr. load	38.00	40.00
Cement, Std. Port. (Tolteca)	per ton	130.00	130.00
Lumber Mex. Sacred Fir (Oyamel)	per M ft.	850.00	800.00
1st Class Pine	per M ft.	1200.00	1200.00
2nd Class Pine	per M ft.	950.00	950.00

* Increase by 1.6th—work 6 days, paid for 7 days.

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers) $2.701. **ENR Common Average:** $1.637.

Building costs cut 1/3 for Unique New Airmen's Barracks

Fenestra* Metal Building Panel Construction Saves Time, Labor, Materials, Money

As compared to the cost of conventional barracks construction, estimated at $2,300 per man, the cost of the nonconventional barracks illustrated above is only an estimated $1,485 per man (just $1.11 per cubic foot)!

And this barracks at Offutt Air Force Base, Omaha, Nebraska, is something special. Flyers of the Strategic Air Command fly "around the clock." As some sleep, others are "taking off." So army engineers are giving them 2-man rooms for peaceful quiet and privacy, better and more convenient bath facilities, a pleasanter place in every way—all at $1.11 per cubic foot . . . a saving of one-third. How?

First, they erect a steel frame. Then into the frame go Fenestra "C" Panels to form curtain walls. These strong, lightweight steel sandwiches packed with glass fiber insulation are 16 inches by 14 feet and can be placed by two men. They form a finished, prime-painted, noncombustible outside and inside wall at the same time. After three courses of "C" Panels, in goes a 14-foot window assembly including Fenestra Steel Windows. Then more panels and up leaps the building!

No mason, no carpenter, no lather, no plasterer. Just a steel worker and a painter, period!

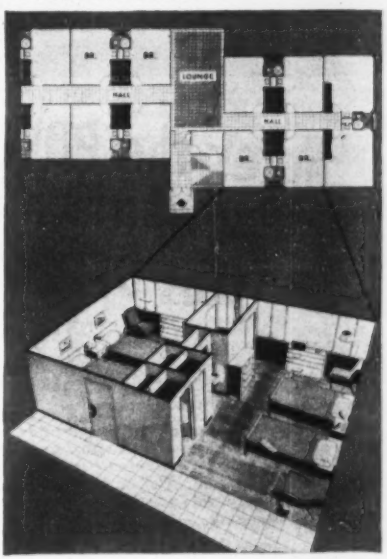
Floors, ceilings and roof are Fenestra "AD" Panels, cellular, with a smooth, flat surface top and bottom. This "AD" Panel floor is topped with two inches of concrete and finished in asphalt tile. And the bottom of the panels forms a finished, prime-painted, noncombustible ceiling for the rooms below.

Think of the advantages in using structural material that also forms finished walls and ceilings. No wonder building costs were cut one-third!

Make Those Same Savings Yourself. Call the Fenestra Representative today (he's listed under "Fenestra Building Products Company" in your Yellow Phone Book). Or mail the coupon.

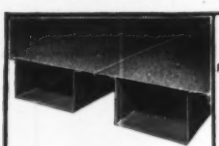
*Trademark

Only $1.11 Per Cubic Foot for this 37 x 282-ft., 3-story Offutt Air Force Base barracks housing 216 men. Total cost about 321 thousand dollars—approximately 30% less than conventionally built barracks . . . and the whole building is firesafe! Contractor: Korshoj Construction Company, Blair, Nebraska.

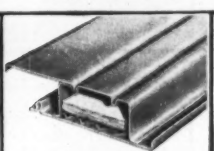


Fenestra **PANELS • DOORS • WINDOWS**

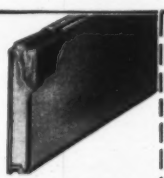
engineered to cut the waste out of building



"D" Panels for floors, roofs, ceilings. Standard width 16". Depth 1½" to 7½".



Acoustical "AD" Panels for ceiling-silencer-roof. Width 16". Depth up to 7½".



"C" Insulated Wall Panels. Standard width 16". The depth is 3".

DETROIT STEEL PRODUCTS COMPANY
Building Panels Division
Dept. ER-7, 2277 E. Grand Boulevard
Detroit 11, Michigan

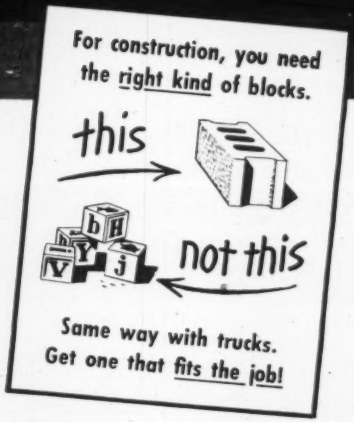
Please send me, without obligation, information on Fenestra Building Panels.

Name _____

Company _____

Address _____

Here's the POWER you want on your job... plus DEPENDABILITY



Whether you're hauling dirt, spreading asphalt, or doing one of many other rugged jobs, you want a truck that fits the job—and provides plenty of low-cost power. Such a truck is a Dodge "*Job-Rated*" truck.

New Dodge "*Job-Rated*" trucks provide more power than before. On 2½-ton models, for instance, Dodge now offers a new 114 hp engine . . . the most powerful Dodge engine ever available in that field. And on high-tonnage models twin carburetion and exhaust system gives you plenty of extra power with extra economy.

And talk about maneuverability! Shorter turning diameters and new worm-and-roller steering gears on many models make the new Dodge "*Job-Rated*" trucks far easier to handle.

If it's dependability you're after, (and who isn't?) you'll go for features like the new Dodge moistureproof ignition and the new high-torque capacity starting motor. They help make starting easier in bad weather.

There's a Dodge "*Job-Rated*" truck to fit your need *exactly*. Get the proof from your nearby Dodge dealer today.

DODGE "Job-Rated" TRUCKS

How Dodge Trucks are "*Job-Rated*" for the Construction Business

A Dodge "*Job-Rated*" truck is engineered *at the factory* to fit a specific job . . . save you money . . . last longer.

Every unit from engine to rear axle is "*Job-Rated*"—factory-engineered to haul a specific load over the roads you travel and at the speeds you require.

Every unit that SUPPORTS the load—frame, axles, springs, wheels, tires, and others—is engineered right to provide the strength and capacity needed.

Every unit that MOVES the load—engine, clutch, transmission, propeller shaft, rear axle, and others—is engineered right to meet a particular operating condition.

"Job-Rated" TRUCKS DO THE MOST FOR YOU

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—BUILDINGS

Conn., Litchfield — DORMITORIES, etc. — B.A. 8/13 — Mary Immaculate Novitiate of Litchfield, Litchfield, 3 story, bsmnt., classrooms, dormitories and infirmary $300,000. Extended date. Plans deposit $75. CD 7/20.

Mass., Norfolk—LABORATORY—B.A. 8/15—State Dpt. Pub. Health, State House, H-203, Contr. 1, out patient-X-ray and laboratory bldg., Pondville State Hospital. Plans deposit $25. Extended date. CD 7/19.

Conn., New Hartford—SCHOOL—B.A. 8/16—Town, Pine Meadow Elementary School, $300,000. Extended date. CD 7/9.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. Pub. Wks., 100 Nashua St., Boston.

Bayer & Mingolla Constr. Co., 90 Lincoln St., Worcester, Mass. LB $2,370,372. hy. Rte. 2, Leominster and Lancaster, Worcester Co.

E. T. O'Neil & Son, 9 Elmwood Ave., Holyoke, Mass. LB $223,721. hy. and bridge, Westfield, Hampden Co. Bids July 24. CD 7/5 and 7/12.

BUILDINGS

LOW BIDS AND CONTRACTS

Neri Constr. Co., 131 E. Main St., Millbury, Mass. LB $798,064. Senior High SCHOOL, Martin St., MILLBURY, MASS. Town, Millbury, Mass.

Aberthaw Co., 80 Federal St., Boston, Mass. CA $500,000. FACTORY, OFFICE AND STORAGE, off Baker St., WEST CONCORD, MASS. General Radio Co., 275 Massachusetts Ave., Cambridge, Mass. CD 7/26.

▲ **E. J. Cross Co.**, 150 Prescott St., Worcester, Mass. CA $1,000,000. FACTORY addn., WORCESTER, MASS. Reed Prentice Corp., 677 Cambridge St., Worcester, Mass.

Dan Deering, 200 Main St., Norwalk, Conn., CA, $514,289 Highland Ave. SCHOOL, NORWALK, CONN. City, Norwalk, Conn.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

N. Y., New York—MUSEUM—B.A. 8/14—Comr. Parks at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., Zone 21, general constr., electrical, heating and ventilating, plumbing for construction of Building 1A, in Sect. 1 of the American Museum of Natural History in Manhattan Square Park, Central, Park West at 79 st., Manhattan Boro. Plans deposit $5 each. CD 4/17

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Cramer-Vollmerhausen Co., Inc.**, 2601 Connecticut Ave. N.W., Wash., D. C., CA, $1,605,286, 30 million gallon 'clear-water basin at Dalecarlia Filter Plant, WASH., D. C. U. S. Eng., First and Douglas Sts. N.W., Wash., 25, D. C. Bids July 17. CD 7/19, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Dorfman Realty Corp., 200 Hart Blvd., St. George, N. Y., Owner Builds. Approx. $480,000. 16 HOUSES to be known as Delphine Terrace, GRASMERE (P.O. Rosebank), N. Y. James Whitford, 140 Bay St., St. George, N. Y., archt.

SOUTH

BIDS ASKED—BUILDINGS

Fla., Miami—SCHOOL—B.A. 8/15—Dade Co. Bd. P. Instruction, c/o Watson, Touby & Watson, archts., 1935 N.W. 21 St., Miami Fla., South Miami Elementary School $300,000.

▲ **Ga., Fort Oglethorpe**—HOSPITAL—B.A. 8/15—Tri-County Hospital Assoc., Ft. Oglethorpe, hospital, $1,000,000. Selman T. Franklin, 421 Poplar St., Chattanooga, Tenn., archt. Extended date. CD 7/3.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Blackwell Engineering Co.**, Warrenton, Va., LB. $1,309,400 Contr. No. 7, sewage treatment plant and pumping station FAIRFAX, VA. Fairfax Co. Court House, Fairfax, Va. Bids July 26. CD 6/5.

▲ **FLORIDA**—State Rd. Dpt., Palm Beach County Court House, West Palm Beach, Fla.

Allied Structural Steel Companies, 20 N. Wacker Dr., Chicago, Ill., LB and Industrial Cong. Co., 3050 4 Ave. S., Minneapolis, Minn., LB, $4,114,696. superstructure comprising steel I-beam spans, continuous Plate girder spans, continuous truss, spans, electrically operated double bascule span, portions of bascule piers, Gilmore St. Bridge, across St. Johns River, Road 5, Job 7202-275-B. Duval Co. Bids July 24. CD 7/16.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Thompson & Street Co.**, Pineville Rd., Charlotte, N. C., LB. $1,492,707, HOSPITAL alterations and addns., DURHAM, N. C. Watts Hospital, Scoville Wannamaker chn., Durham, N. C. Bids July 24. CD 6/25.

E. L. Brehm, 321 Dodge Ave., New Orleans, La. Owner Builds. $900,000. 100 HOMES, near Beverly Gardens Drive, NEW ORLEANS, LA.

▲ **Globe Constr. Co.**, 8137 Oleander St., New Orleans, La. Owner Builds. $5,500,000. 500 HOMES, Lakefront area, NEW ORLEANS, LA.

MIDDLE WEST

BIDS ASKED—BUILDINGS

O., Maple Grove—FACTORY—Bids Asked—Basic Refractories, Inc., Maple Grove, dolomitic refractory materials factory, incl. two 395 ft. rotary kilns, $3,500,000.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Kuchard & Assocs.**, 221 Jewett Blg., Des Moines, Ia., CA $1,375,800, constr. HOUSING projects III. 29-1 and III. 292, FREEPORT, ILL. Housing Auth. of Stephenson Co., Freeport, Ill. Bids June 21. CD 7/23, under LB.

WEST OF MISSISSIPPI

LOW BIDDERS—HEAVY CONSTRUCTION

† **Iowa**—B.A. 8/14—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., constr. set back levee and degrading section of existing levee, Reach No. 1, Green Bay Levee and Drainage Dist. No. 2, Lee Co., incl. 67,000 cu. yds. embankment fill and 19,000 cu. yd. degrading levee. CD 6/9/44.

▲† **Oklahoma**—RAILWAY TRACKS—B.A. 8/21—U. S. Eng., in Theatre of Naval Reserve Center, 15 and Sandusky Sts., Tulsa, relocation of M-K-T railway tracks at Fort Gibson Dam, Grand Neodho River Watershed, Inv. No. Civeng 45-066-52-5. $1,500,000.

▲† **Tex., Bryan**—HEADQUARTERS, etc.—B.A. 8/21—U. S. Eng., 606 Santa Fe Bldg., Galveston, headquarters bldg. wing, base operations bldg. rehabilitation, comm. bldg. rehabilitation, each bldg. to have some new construction. Inv. No. Eng. 41-243-52-13. $350,000; 4 warehouse, Inv. No. Eng. 41-243-52-13. $1,000,000; A10 warehouse, $200,000 at Bryan Air Force Base. CD 3/28.

CALIFORNIA—B.A. 8/22—State Div. Hys., P. Wks Bldg., Sacramento, Calif.

San Luis Obispo Co.—rein. con. slab bridge across Los Berros Creek about 2 mi. S.W. of Arroyo Grande 2 rein.-con. bridges and underpass at Santa Rosa St. Ida St. and S.P.R.R.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

BIDS ASKED—BUILDINGS

Tex., Lubbock—CHURCH—B.A. 9/18—First Methodist Church, Lubbock, church. $500,000. Plans deposit $50 Extended date. Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., Fort Worth, engr. and archt. CD 7/17.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

IOWA—State Hy. Comn., Ames, Ia.

Land Constr. Co., 502 Seneca St., St. Joseph, Mo., LB $318,488, b. conc. pavement resurf. 25.559 mi. P 1019 Adair and Cass Counties.

L.B. $186,646, b. conc. pavement resurf. 10.46 mi. FN-11, Warren Co.

Central Eng. Co., 2531 Rockingham Rd., Davenport, Ia., LB $263,252, b. conc. pavement resurf. 16.97 mi. FN-155 Cass Co.

L.B. $270,867, 16.329 mi. FN-14, S. Harrison Co.

L.B. $289,863, b. conc. pavement resurf. 12.741 mi. FN-376 Polk Co.

L.B. $360,810 p. conc. pavement resurf. 25.707 P-1200 Marion, Polk and Warren Counties.

Bids July 24. CD 7/11.

Iowa Road Building Co., Fairmont, Ia., CA, $66,033 street imprvs., ALGONA, IA. City, Algona, Ia. Buell & Winter, 508 Insurance Exchange Bldg., Sioux City, Ia., engrs.

Beu & Sons Co., Grandy Center, Ia., CA, $65,207, surf. various roads, ELDORA, IA. Hardin Co. Bd. Supvrsers., Eldora, Ia. Bids July 16. Robert T. Johnson, co. engr.

Missouri Valley Limestone Co., 409 B. T. Bldg., Des Moines, Ia., CA, $71,717, surf. 21.5 mi. in 4 projects, HARLAN, IA. Shelby Co. Bd. Supervs., Court House, Harlan, Ia. Bids July 16.

City, Rasmus Thompson, mayor, McCallsburg, Ia., received no bids July 18, water works distr. sys., deep well, pump, air compressor, tank or 10,000 gal. tank on tower, MCCALLSBURG, IA. Will re-advertise. CD 7/3.

Concrete Materials & Constr. Co., 405 Granby Bldg., Cedar Rapids, Ia., CA, $74,420, road surf. 64.45 mi. on various county roads, MARENGO, IA. Iowa Co. Bd. Supervs., Court House, Marengo, Ia. Bids July 18.

Peter Kiewit Sons Co., Omaha Natl. Bank Bldg., Omaha, Neb., CA, $98,750, est. $90,000. resurf. 30 St. from Cuming to Fort Sts., OMAHA, NEB. City, City Hall, 18 and Farnam Sts., Omaha, Neb. Bids July 17. E. W. Woodbridge, city engr.

† **J. A. Tobin Constr. Co.**, 3700 Rainbow St., Kansas City 3, Kan., **L. G. Barcus & Sons**, 1450 State St., Kansas City, Kan. and **R. G. Aldrige**, 1610 Nebraska St., Kansas City, Kan. CA at Cost. flood clean-up, etc., Fairfax and Armourdale Industrial distrs., Wyandotte Co., KANSAS. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Awarded July 21.

† **Reno Constr. Co.**, 7400 W. 79 St., Overland, Park, Kan. CA at Cost. flood clean-up, Argentine dist., Wyandotte Co., KANSAS. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Awarded July 21.

† **Treadwell Constr. Co.**, Midland, Pa., LB, 087,605. one 20.8 ft. by 35x87 ft. fixed-wheel gate for intake structure, Mexican side, Falcon dam and power plant. Spec. M-4537 (IBWC). TEXAS. Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. Bids July 18. CD 1/6/49.

▲ **Service Pipe Line Co.**, Phittower Bldg., Tulsa, Okla., Own forces. $135,000. crude oil gathering lines, Stephens and Haskell Counties;

Purchase and Hire. Approx. $165,000. 65 mi. crude oil gathering lines, Throckmorton and Shackelford Counties;

O. R. Burden Const. Corp., 6702 E. 21 St., Tulsa, Okla., CA. Approx. $784,000, 49 mi. 10 in. crude oil pipe line from Salt Fork of Brazos River to Bowie, laying pipe for river crossing, Montague Co.;

Smith Constr. Corp., Fort Worth Natl. Bank Bldg., Fort Worth, Tex., CA. Approx. $1,184,000. 74 mi. 10 in. welded joint crude oil line from Jud to eastward to Salt Fork, Brazos River, Haskell Co. Grand total $2,268,000. TEXAS. CD 5/10.

City, City Hall, Main and Harwood Sts., Dallas, Tex., Force Account. $125,000. street imprvs., asph. paving north sect. of city, DALLAS, TEX. J. T. Conroy, Pub. Wks. Eng. CD 11/3/49.

City, City Hall, Main and Harwood Sts., Dallas, Tex., Force Account. $100,000. storm sewers north sect. of city, DALLAS, TEX. J. T. Conroy, Pub. Wks. eng. CD 6/26/50.

City, Marshall, Tex., Own forces. $115,000. addnl. asph. type street paving, MARSHALL, TEX. J. E. Albright, city engr.

City, Marshall, Tex., Own forces. $78,000. addnl. airport work, MARSHALL, TEX. J. E. Albright, city engr.

City, San Bentio, Tex., Purchase and Hire. $45,000. water distr. line extens., SAN BENITO, TEX. Sigler, Clark & Winston, Box 428, Weslaca, Tex. engrs. CD 10/16.

BUILDINGS

LOW BIDS AND CONTRACTS

O'Rourke Const. Co., 4711 Koehler St., Houston, Tex., CA. $140,000. PLANT, HOUSTON, TEX., Childers Mfg. Co., 625 Yale St., Houston, Tex. Awarded July 24. CD 5/10. under LB.

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▲ **Levelland Refining Co.**, Levelland, Tex., cancelled bids, REFINERY, est. $2,441,763, LEVELLAND, TEX. CD 6/1.

General Lumber Co., 5940 S. Lamar St., Dallas, Tex., Own Forces. $110,000. LUMBER YARD and mill unit, SAN ANGELO, TEX. CD 2/14.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Wash., Moses Lake**—FUEL SYSTEM ADDNS.—B.A. 8/14—U. S. Eng., Bldg., 602 City—County Airport, at Larson Air Force Base, Inv. Eng 45-164-52-2. Col. H. H. Mills, dist. engr. CD 12/28/49.

Wash., Everett—SCHOOL—B.A. 8/20—School Dist. No. 2, Everett High School, Baker Heights Elementary School $575,000. Plans deposit $40: H. W. Hall Commerce Bldg., archt. CD 6/12.

SOON LETS CONTRACT—BUILDINGS

Calif., San Francisco—WAREHOUSE—City Transfer & Storage Co., 430 Main St., San Francisco, Calif., soon lets contract rein.-con. warehouse. Ward & Bolles, 215 Leidesdorff St., San Francisco, Calif., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

WASHINGTON—State Hy. Dpt., Olympia

N. Fiorito Co., 844 W. 48 St., Seattle, Wash., LB, $194,129, c. conc. paving 3 mi. Middle Road, King Co.

Grant Constr. Co., Spokane, Wash., LB, $210,725, reconstr. ditches, light bit. and stockpiling 7.5 mi. Secondary State Hy. No. 3-H, Spokane and Whitman Counties.

C. E. Oneal, Ellensburg, Wash., LB, $64,725, est. $79,000, draining, removing slides and surf. 0.4 mi. Primary State Hy. No. 5, Rimrock Lake vicinity, Yakima Co. Bids July 24. CD 7/12.

† **N. Fiorito Co.**, 844 W. 48 St., Seattle, Wash., CA, $218,179, clearing, grubbing, grading, surf., draining 6.839 mi. Arlington access road, Access Road Proj. AD-1(2), Snohomish Co. WASHINGTON Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore. Bids July 24. CD 7/18, under LB.

† **Hansen & Parr Constr. Co.**, 232 Pacific St., Spokane, Wash., LB, $126,879, est. $91,240, relocation 1700 ft. watermains and lines 1300 ft. sewers, 150 ft. culverts and 17 bldgs. Fairchild Air Force Base, Inv. 52-1, SPOKANE, WASH. U. S. Eng., 602 City-County Airport, Walla Walla, Wash. Bids July 24. CD 7/11.

▲† **Moore & Roberts Inc.**, and **B. & R. Constr. Co.**, 593 Mission St., San Francisco, Calif., LB, $2,117,200, high power engine test facilities at McClellan Field, SACRAMENTO, CALIF. Purch & Contg. Office, McClellan Field, Calif. CD 4/5.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Westinghouse Electric Corp.**, Union Bank Bldg. Pittsburgh, Pa., CA, $3,000,000, electrical apparatus to be installed in new aluminum production plant, WENATCHEE, WASH. Aluminum Co. of America, 2156 Gulf Bldg., Pittsburgh 19, Pa. CD 1/18.

Carrico & Gautier, 365 Ocean Ave., San Francisco, Calif., CA, $703,595, Notre Dame COLLEGE, BELMONT, CALIF. Sisters of Notre Dame, 3000 Fulton St., Redwood City, Calif. Bids June 27, awarded July 16. CD 7/9, under LB.

Fresno Housing Auth., Fresno, Calif., rejected bids June 21, 58 DWELLINGS, Calif. 6-7, LB, $481,674, FRESNO, CALIF. CD 7/3, under LB.

† **Zoss Constr. Co.**, 1037 N. Cole Ave., Hollywood, 38, Calif., LB, $972,000, exten. and remodeling of TERMINAL ANNEX, LOS ANGELES, CALIF. General Services Admin., P. Bldg. Service, General Services Bldg., Wash., D. C. Bids July 26. CD 7/6.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Sudbury—B.A. 8/14—G. M. Patterson, clk., 11 E. Elm St., Sudbury, waterworks system, for McKim Twp., Sudbury, Ont. A. C. Northover, 11 E. Elm St., Sudbury, engr. CD 6/2/44.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

British Columbia Bridges & Dredging Co. Ltd., 544 Howe St., Vancouver, B. C., CA, $245,000, dredging of Fraser River, VANCOUVER, B. C. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded July 23. CD 10/5/49.

A. R. McGlashan, 49 Princess St., Fort Erie, Ont., Approx. $267,105, imprvts. to Canadian end of the Peace Bridge, incl. constr. 2 cabins, customs truck warehouse, bus terminal, warehouse and office bldg., Fort Erie ONTARIO Peace Bridge Comn., Fort Erie, Ont. CD 2/16.

Holdcroft Constr. Co. Ltd., Division St. N., Kingston, Ont., CA, $100,000, water supply and sewers at Canadian Army Camp, ACTON, ONT. Defense Constr. Ltd., 441 Queen's Quay W., Toronto, Ont. Bids July 4, awarded July 23. CD 6/26.

Holderoft Constr. Co. Ltd., Division St. N., Kingston, Ont., CA, Approx. $58,000, 12-in. water main at Army Camp BARRIEFIELD, ONT. Defense Constr. Ltd., 441 Queens Quay W., Toronto, Ont.

Storms Contg. Co. Ltd., 1 Copeland St., Toronto, Ont., CA $160,000, hardsurfaced extension to runway, GORE BAY, ONT. Govt. of Canada, Hunter Bldg., Ottawa, Ont. Bids 6/28. CD 6/22.

BUILDINGS

LOW BIDS AND CONTRACTS

W. C. Wells Constr. Co. Ltd., 140 Ave. N., Saskatoon, Sask., CA. Approx. $719,000, supply and erecting 16 QUONSET HUTS at Army Camp, WAINWRIGHT, ALTA. Defense Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. CD 7/9.

T. A. Andre & Sons, Ltd., 580 Brock St., Kingston, Ont., CA. Approx. $700,000, No. 20, R. 500-men MESS, BARRIEFIELD, ONT. Defense Constr. Ltd., 411 Queen's Quay W., Toronto 25, Ont. Bids July 4. CD 6/25.

Ross Meagher Ltd., 9 Echo Dr., Ottawa, Ont., CA, $375,000. 1 story, 150x325 ft., brick, concrete WAREHOUSE and office bldg. on W. Richmond Rd. between Clifton Rd. and Kirkwood Ave., OTTAWA, ONT. Canadian General Electric Co. Ltd., Albert St., Ottawa, Ont. Abra Balharrie & Shore, 55 Metcalfe St., Ottawa, Ont., archts.

Eastwood Constr. Co. Ltd., P.O. Box 796, Peterborough, Ont. CA, $579,753, 2 story 63x250 ft., concrete, brick COLLEGIATE, PETERBOROUGH, ONT. Bd. Educ., 24b Rubridge St., Peterborough, Ont. Bids July 12. CD 7/25; under LB.

Flamme & Lafleur, Thetford Mines, Que., CA, $150,000. 68x129 ft., 24x54 ft., rein.-con., structural steel concrete block, GARAGE and compressor house, BLACK LAKE, QUE. Johnson's Asbestos Co. Ltd., Black Lake, Que., Kilborn Eng. Co., 137 W. Wellington St., Toronto Ont., engr. CD 2/6.

▲ **L. Donolo Inc.**, 8320 Blvd. St. Laurence St., Montreal, Que., CA, $3,000,000. 1 story 200x600 ft., rein.-con., concrete block STORAGE BLDGS., LASALLE, QUE. (Montreal District). P. C. Amos, 4530 Cumberland Ave., Montreal, Que., archt. Defense Constr. Ltd., 70 Lyon St., Ottawa, Ont., engrs.

▲ **Canadian Kellogg Co. Ltd.**, 194 W. Bloor St., Toronto, Ont., design and construct, $5,000,000, petrochemical PLANT, MONTREAL EAST, QUE. B. A. Shawinigan Ltd., 600 W. Dorchester St., Montreal, Que.

J. L. E. Price & Co. Ltd., 680 W. Sherbrooke St., Montreal, Que., CA. Approx. $180,000. 1 story 32x133 ft., 1 story 62x37 ft., concrete, structural steel, brick gas mfg. PLANT, at Turcot MONTREAL, QUE. Pintsch Compressing Corp., 635 Lusignan St., Montreal, Que. CD 5/21.

▲ **Louis Donolo Inc.**, 8320 St. Laurence Blvd., Montreal, Que., LB. Approx. $4,000,000, four STORAGE bldgs., central heating plant and tunnels for Naval Stores Development VILLE LA SALLE, QUE. Defense Constr. Ltd., 1274 Guy St., Montreal, Que. Bids May 15. CD 5/1.

FOREIGN

BIDS ASKED—HEAVY CONSTRUCTION

Australia, Queensland—B.A. 10/1—At office C. E. Petersen, secy., Dpt. of the Co-Ordinator, General of Pub. Wks., Box 185C, G.P.O., Brisbane, Queensland, penstock and haulage, Spec. No. TF/5; tunnel and surge tank, Spec. No. TF/6; underground power house, shafts and tunnels Supplementary Spec. No. TF/6A; diversion weir, intake, conduits, power house, Supplementary Spec. No. TF/6B, for Tully Falls Hydro-Electric Proj. CD 5/24.

Egypt—B.A. 10/1—Under-Secretary of State, Ministry of P. Wks., Cairo, dredging and relevant hand works. Plans deposit $11.50.

▲ **Egypt**—Egypt Govt., Cairo, Ministry of P. Wks., Cairo, received low bid for completing hydro electric project at Aswan Dam from Sir N. Lindsay Parkinson & Philip Holsman (British), Societe des Industries et de Polytechnique (Egyptian) and Goodhof Honcheset & Oberhausen (German) 12,626,000 Egyptian Pounds. No American firms bid on project. CD 11/16/50.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Fla., Clearwater**—Pinellas County Water System, Pinellas County Comn., Court House, Clearwater, water supply proj. incl. rein.-con., pressure pipe and C.I. pipe, well field, booster pumping station, etc., $2,500,000; 16-in. distribution system exten. and 200,000 gallon elevated steel tank, $150,000. Brilye, Wild & Assocs., P. O. Box 3052, Daytona Beach, Fla., consult. engrs. and Black Laboratories, Gainesville, Fla., consult. engrs. S. K. Keller, Clearwater, c/o owner, general supt.

Fla., Port Orange—City, imprvts. to city waterworks in outlying sections. Approx. $150,000. Briley, Wild & Assocs., Daytona Beach, consult. engr.

N. Y., Highland Twp.—Palisades Interstate Park Comn., Bear Mountain, rein.-con. drinking water reservoir, rein. con. sewage treatment tanks and filter beds at Harriman State Park. $142,167.

Okla., Midwest City—City, voted $328,000 bonds, 6 addnl. wells and 1,000,000 gal reservoir, J. M. Plank, 1323 N. Robinson St., Okla. City, consult. engr. CD 7/5.

Okla., Oilton—City, W/W extens. and addnl. wells. $100,000. Hudgins-Thompson & Ball & Assoc., 1100½ W. Main St., Oklahoma City, consult. engrs.

Okla., Shawnee—City, bond election August 7, WW expans. $775,000. Benham Engr. Co., American Natl. Bldg., Oklahoma City, consult. engrs. CD 1/11.

Ore., Bend—City, City Hall, voted bonds, water sys. imprvs. $750,000. John W. Cunningham, Spalding Bldg., Portland, consult. engr., A. E. May Jr., city engr. CD 11/10/47.

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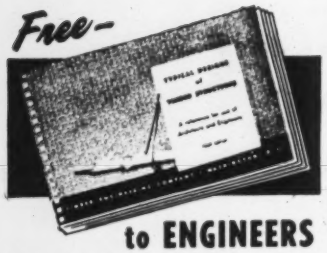

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Tex., Groves—Jefferson County Water Control & Imprvt. Dist. No. 1, Groves, voted bonds, water sys. $175,000. CD 7/5.

Tex., Henderson—City, water supply well, $35,000; c.i. mains and distr. lines, $40,000.

Tex., Mesquite—Dallas Co. Water Control & Imprv. Dist. 6, c/o comr. Court, Dallas, water sys. $225,000.

Tex., Plainview—High Plains Underground Water Control Dist. No. 1, Plainview, underground water dist. of 10,000 sq. mi. primarily for domestic usage. $750,000.

SEWERS, WASTE DISPOSAL

Ga., Vidalia—City, bond election Aug. 14, additional sanitary sewers, $150,000. CD 2/14/47.

Mass., Worcester—City, City Hall, sewage pumping station, and force mains, $400,000. Camp, Dresser & McKee, 6 Beacon St., Boston, consult. engrs. CD 7/16.

Minn., Comfrey—Village, A. J. Krzmarzik, clk., sanitary sewer sys., $130,000, Pfeifer & Shultz, 702 Wesley Temple Bldg., Minneapolis, consult. engrs.

Mo., Independence—City, sewerage sys. imprvs., and extensions, $995,000.

▲ Tex., Fort Worth—City, City Hall, bond election September 11, incinerator No. 1, $300,000; Incinerator No. 2, $350,000; Incinerator No. 3, $150,000; storm sewers, $2,500,000. C. M. Thelin, Dir. Pub. Wks., engr. CD 7/24.

Tex., Groves—Jefferson County Water Control & Imprvt. Dist. No. 1, Groves, voted bonds, sanitary sewer sys. imprvs. $150,000. CD 7/5.

▲ Tex., San Antonio—City, Jack White, mayor, City Hall, Military Plaza, bond election September 11, No. 1, new disposal plant, $700,000; No. 2 addnl. sewage disposal plant unit, $800,000; No. 3, construct third sewage disposal plant unit, $800,000; sanitary sewer lines, $3,000,000; storm sewers, $3,500,000. Tom Coghill, city engr. CD 12/15/47.

Tex., Texas City—Town, voted $500,000 bonds, sewage disposal plant, $850,000. CD 6/28.

Va., Pearisburg—City, bond election August 14, sewage treatment plant, $240,000.

BRIDGES

Kan., Hiawatha—Brown Co., repairs and replacements of bridges, $300,000, Frank Reeves, co. engr.

Neb., Fairbury—Jefferson Co., repair of county bridges, $125,000.

Neb., Omaha—Douglas Co., bridges and repairs, $380,000, Wm. Green, co. engr.

N. Y., Barton—Town, 18.3 mi. roads, $128,100.

N. Y., Candor—Town, 19.9 mi. roads, $139,300.

N. Y., Owego—Town, 42.3 mi. roads, $296,200.

N. Y., Richferd—Town, 18.2 mi. roads, $128,800.

N. Y., Spencer—Town, 15 mi. roads, $105,000.

N. Y., Tioga—Town, 20 mi. roads, $144,200.

R. I., Cranston—City, Pub. Wks. Dpt., Highway widen Park Ave. 4 ft. on each side, 38 ft. road cement base, asph., Reservoir Ave. to Elmwood Ave., $200,000.

STREETS AND ROADS

Mo., Springfield—City, C. R. Brown, comr., imprvs. to east trafficway, $163,695, O. H. Reynolds, city engr.

Okla., Duncan—City, grade, b. conc. in Dist. 55, $736,000, Hudgins-Thompson-Ball & Assoc., 1100½ W. Main St., Okla. City, consult. engrs.

Wash., Seattle—King Co., City—County Bldg., Seattle, Zone 4, road from Duvall to Skykomish, $250,000.

EARTHWORK, WATERWAYS

Pennsylvania—State Dpt. Forest & Waters, Education Bldg., Harrisburg, construct seawall for protection of Presque Isle Peninsula and Erie Harbor, Erie Co. $750,000. CD 7/19/45.

† Texas—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, development of a lake park and resort in area of Dam "B" on Neches River, near Jasper. $300,000. CD 2/11/49.

▲† Texas—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, levees and revetment work below Denison on Red River, $1,000,000.

† Texas—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, closure of Cane River near Denison, $875,000.

▲† Texas—U. S. Eng., Box 61, Tulsa 2, Okla., Overton-Red River Canal. $2,750,000.

▲† Texas—U. S. Eng., Box 61, Tulsa 2, Okla., completion of Texarkana Dam, $4,500,000.

† Texas—U. S. Soil Conservation Service Dist., c/o Federal Bldg., Dallas, Tex. (East Fork Assoc., Court House, Dallas, Tex., sponsors), detention overflow reservoir, 40 ft. high, earthen on Duck Creek, near Garland, Dallas Co. $232,714.

▲ Quebec—POWER DEVELOPMENT—Dpt. Hydraulic Resources, Hon. J. S. Bourque, minister, (Prov. Govt.), Quebec City, Que., constr. power station at No. 2 Rapids, Upper Ottawa River, capable of generating 40,000 H.P. Approx. $1,000,000.

AIRPORTS

† Colo., Denver—MESS, etc.—U. S. Eng., 909 17 St., Denver 2, Colo., officers mess and club, Lowry Air Force Base, $300,000. Cerf S. Ross Assocs., 111 Auditorium Circle, San Antonio, Tex., archt.

† Fla., Orlando—BASE IMPRVS.—U. S. Eng., 575 Riverside Ave., Jacksonville, general imprvts. at Orlando Air Force Base, $699,000.

† Ga., Atlanta—WAREHOUSE—U. S. Army, Georgia National Guard Bureau, Dobbins Air Force Base, Marietta, Ga., plans by Hal. W. Greer, Buckhead Theater Bldg., Atlanta, Ga., warehouse No. 2, $435,000.

▲ Tex., Fort Worth—AIRPORT—City, City Hall, bond election September 11, new International Airport unit, $1,750,000. C. M. Thelin, Dir. Pub. Eng. Engr. CD 9/16/48.

▲† Tex., Kelly Air Force Base—WAREHOUSE, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, large warehouse, $5,000,000; one large warehouse for special undisclosed purpose, $4,500,000; moderate sized warehouse, $3,000,000, rein.-con. type engine test stands, $1,500,000. CD 6/27.

▲ Va., Burke—AIRPORT—Civil Aeronautics Admin., 17 St. and Constitution Ave., N.W. Wash. 25, D.C., plans 1 airport incl. 7,000x200 ft. paved north-south runway and 7,000x150 ft., east-west runway, access road, control tower, temporary terminal, paved taxiways, roads and parking area, $14,000,000; 2nd 7,000x200 ft. north-south runway, taxiways, permanent terminal roads, parking areas and storage facilities, $12,000,000; extending north-south runways to 10,000 ft., wid'n access road, $5,000,000; wid'n. east-west runways to 200 ft., wid'n. taxiways to 100 ft. terminal addns., maintenance bldg., paving and utilities. $7,000,000.

LATIN AMERICA

Mexico—C. N. de C. V., Sria. de Communicaciones y Obras Publicas, Mexico City, plans 554 kilometers of local roads, $1,380,000.

Mexico, Mexico City—Muebles Briones, S. A., Lago Iseo, 50, Col. Anahuac, Mexico City, plans steel tubes factory, $350,000.

Mexico, Mexico City—Fundidora Veracruzana, S. A. Ave. Ferrocarril, 9, Mexico City, plans steel factory-foundry, $750,000.

Mexico, Mexico City—R. C. A. Victor Mexicana, S. A., Manuel villalongin, 196, Mexico City, plans radio-telephonic station, $300,000.

PUBLIC BUILDINGS

▲ † Ala., Huntsville — ASSEMBLY RESEARCH, etc. — U. S. Eng., P.O. Box 1169, Mobile, 71 Ala, plans by Robert & Co. Assocs., 96 Poplar St., N.W., Atlanta, Ga., machine assembly, research, measurements center bldgs., etc. at Redstone Arsenal, $1,500,000.

Calif., Culver City — SCHOOLS — Culver City Unified School Dist., 40341 Irving Pl., Plans by Daniel, Mann Johnson, Mendenhall, 672 S. Lafayette Park, Pl., Los Angeles, Calif., El Rincon School, $398,000; frame, stucco Airport School, $534,000. CD 6/13.

▲ Calif., Fresno—SCIENCE—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Swartz & Hyberg, Rosell Bldg., Fresno, science bldg., Fresno State College. $1,300,000. CD 4/12.

Calif., Los Gatos—HOSPITAL—Bd. Directors of West Valley Hosptial Dist., Los Gatos, $750,000 bond election September 18, hospital, Saratoga and Campbell Area. CD 12/19/49.

Calif., Pismo Beach—SCHOOL—Pismo Beach School Dist., Pismo Beach, plans by Daniel, Mann, Johnson, Mendenhall, 672 S. Lafayette Park Pl., Los Angeles, frame, stucco school, $540,000.

▲ Conn., Bridgeport—HOUSING—City Housing Auth., 252 Hallett Ave., plans by Harry G. Lindsay, 2211 State St., Bridgeport, 1,000 units, 8 story, brick, steel concrete, housing Main St., and Evitts Lane, $1,000,000. CD 10/29/49.

▲ Del., Marshallton—SANITORIUM ADDNS.—Delaware State Bd. Health, Dover, Del., plans by G. Morris Whiteside 2nd, du Pont Bldg., Wilmington, Del., Brandywine and Edgewood Sanitoria addns., $2,000,000.

▲ Ga., Atlanta—JUDICIARY, etc.—State, plans by A. Thomas, Bradbury 60 5 St. N.E., Atlanta, judic'ary bldg., $3,500,000; state office Bldg., $3,500,000. CD 1/12/44.

▲ Ill., La Grange—SCHOOL ADDNS.—School Dist. 102, 115 W. Cossitt St., plans by Jos. C. Llewellyn, 38 S. Dearborn St., Chicago, 3, Ill., Goodman School addn., 1200 Goodman Rd.; Forest Road School at Forest Road and Jackson St., $1,000,000.

▲ Mass., Braintree—POWER PLANT—Town, Electric Light Dpt., 44 Allen St., 2 story, brick, steel, concrete electric power plant addn., $1,500,000. Chas. T. Main Inc., 80 Federal St., Boston, consult. engr.

Mass., Brookline—HEALTH CENTER—Town, Dpt. Pub. Health, plans by Jas. H. Ritchie & Assoc., 38 Newbury St., Boston, 3 story, 48x106 ft. brick, concrete, steel public health center, incl. laboratory clinics, nurses and admin. offices, etc., Harvard and Pierce Sts., $523,000. CD 3/20.

Mass., Salem—COLLEGE—Commonwealth of Mass., Bd. Educ., 200 Newberry St., Boston, teachers college addn., $500,000.

▲ Mass., Shrewsbury—SCHOOL—Town Town Hall, elementary and high school, $1,000,000.

Mass., Waverly—HOSPITAL—State Dpt. Mental Health, 15 Asburton Place, Boston, plans by Abbott Assoc., Inc., 131 State St., Boston, 2 story, bsmnt., brick, steel, concrete hospital for blind, feeble minded at Walter E. Fernald State School, M-214, Contr. 1, $750,000.

Minn., Warren—SCHOOL—Bd. Educ., A. A. Harris, clk., plans by L. C. Pinault, St. Cloud, school, $623,000. CD 1/25/45.

Nev., Elko—HOSPITAL—Elko Co., Court House, county hospital, $975,000. CD 7/26/46.

▲ **N. Y., Tarrytown**—HIGH SCHOOL—Bd. Educ., Union Free School Dist. No. 1, Tarrytown, high school on 35 acre site, $3,190,000.

O., Akron—LIBRARY—Bd. Trustees, Akron Public Library, $495,000 bond election Nov. 6 branch library bldgs. CD 11/16.

▲ **O., Akron**—SCHOOLS—Bd. Educ., 70 N. Broadway, plans by Firestone & Cassidy, 175 W. Bowery St., Ellet elementary school addn. and remodel old bldg.; plans by Wm. Boyd Huff, 1050 N. Main St., Goodyear Junior High School 18 acre tract at Hammel St., Palmetto Ave. and Barbara Ave. in southeast Akron; plans by Wagner & Luxmore, Permanent Bldg., Buchtel High School addn., remodel old bldg.; plans by Kraus & Helmkamp, 247 E. Exchange Bldg., North High School addn., remodel old bldg.; plans by J. Adam Fichter and Harry A. Brooker, 706 Crosby St., Howe School addn. Approx. total $5,000,000. CD 11/16.

† **O., Rossford**—WAREHOUSES—U. S. Eng., Madison Ave. and Eighth St. W., Huntington, W. Va., plans by Bellman, Gillett & Richards, 518 Jefferson St., Toledo, three 1 story car-level 180x960 ft. warehouses for freight car loading, permanent type constr., 1 one story 200x200 ft. warehouse for storage of paints and lubricants; improv. 100,000 sq. yds. area for open storage pads (hard standing storage) at Rossford Ordnance Depot.

▲ **Pa., Norristown**—NURSES HOME, HOSPITAL—Montgomery Hospital, Norristown, plans by The Ballinger Co., 121 N. Broad St., Phila., nurses home, $750,000; hospital addn. $1,000,000. CD 11/18/46.

▲ **S. C., Pacolet**—HOUSING—Pacolet Housing Auth., Pacolet, 300 housing units. $2,000,000.

S. C., Williamston—HIGH SCHOOL—Williamston-Pelzer Consolidated School Dist., Williamston, voted bonds, high school. $750,000. Wm. G. Lyles, Bissett, Carlisle & Wolff, 1321 Bull St., Columbia, archts.

▲ **Tex., Dallas**—SCHOOLS—Pleasant Grove Independent School Dist., Pleasant Grove, via Dallas, bond election July 31, high school, $650,000; grade school, $425,000; elementary school, $400,000. CD 10/23/50.

▲ **Tex., Edinburg**—COURT HOUSE—Hidalgo Co., Edinburg, bond election August 11, 70,000 sq. ft., masonry court house. $1,500,000. R. Newell Wagers, Edinburg, archt. CD 7/16.

▲ **Utah, Salt Lake City**—DORMITORY—State Bldg. Comm., State Capitol, plans by Slack W. Winburn, 419 Beason bldg., men's dormitory at the University of Utah. $1,225,000.

Va., Leesburg—HIGH SCHOOL—Loudoun Co., Leesburg, plans by Eubank & Caldwell, Boxley Bldg., Roanoke, Consolidated High School near here, $500,000.

▲ † **W. Va., Point Pleasant** — ORDNANCE PLANT — U. S. Eng., Madison Ave. and 8 St. West, Huntington, W. Va., ordnance plant for gun tubes to be operated by National Tube Co. (U.S. Steel) Frick Bldg., Pittsburgh, Pa., $32,000,000.

▲ **Wis., Platteville**—LIBRARY, etc.—Bd. Regents of Normal Schools, Madison, plans by R. C. Kirchhoff, Madison, state archt., library and training school at State Teachers College, $1,300,000.

Wis., River Falls—LIBRARY—Bd. Regents, of Normal School, Madison, plans by R. C. Kirchhoff, Madison, state archt., library at State Teachers College, $500,000.

Wis., Stevens Point—LIBRARY—Bd. Regents of Normal Schools, Madison, plans by R. C. Kirchhoff, Madison, state archt., library at State Teachers College, $600,000.

Que., Montreal — SCHOOL — Province of Quebec, Dpt. Youth and Social Welfare, Quebec City, Que., school for mentally defective children, $750,000.

▲ **Sask., Saskatoon**—POWERHOUSE—University of Saskatchewan Saskatoon, powerhouse on campus to serve university hospital, $1,000,000.
000. Tom Coghill, city engr. CD 7/16.

COMMERCIAL BUILDINGS

Calif., Torrance—DWELLINGS—Ocean Hills Development Co., 612 S. Flower St., Los Angeles, Calif., plans by Charles Q. Matcham, 612 S. Flower St., Los Angeles, Calif., 80 frame, stucco dwellings at Ocean St. and 231 St. $500,000.

Ind., Indianapolis—HOMES—Kenneth Mitchel, 6450 W. 10 St., Indianapolis, Zone 12, 50 brick homes on west side of city, $650,000.

▲ **Mass., Framingham**—APARTMENT—Owner, c/o Albert C. Rugo, designer, 35 Teter Parley Rd., Jamaica Plain, masonry apartment, Cochituate Rd., corner Steen St., $1,125,000.

Mass., West Springfield—SHOPPING CENTER—Century Holding Corp., 1200 Main St., Springfield, plans by Feer & Nast, 27 School St., Boston, shopping center on 12 acre development incl. parking, Memorial Drive, Mark Linenthal, 16 Lincoln St., Boston, consult. engr.

▲ **Minn., Golden Valley** (Minneapolis P. O.)—HOSPITAL—Glenwood Hills Hospital, R. T. Rascop, administrator, Golden Valley, plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, 4 story hospital addn., $1,100,000. CD 7/10.

Miss., Jackson—HOSPITAL—Mississippi Baptist Hospital, 1190 N. State St., hospital addn., $500,000.

▲ **O., Columbus**—SHOPPING CENTER—Howard G. Linn & Assoc., 4974 N. High St., shopping center on 72 acre tract on N. High St. to Olentangy River, north of city limits. Several millions.

▲ **Pa., Lancaster**—HOSPITAL—St. Joseph Hospital, College Ave., plans by Schmidt, Garden & Erickson, 104 N. Michigan Ave., Chicago 3, Ill., hospital. $3,750,000.

S. C., Aiken—HOTEL—E. E. Childs Co. Aiken, hotel. $850,000.

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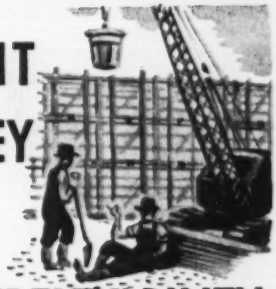

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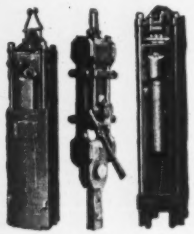

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Tex., Houston—OFFICE—Anderson Clayton & Co., Cotton Exchange Bldg., office, $500,000.

▲ Wis., Milwaukee—ORPHANAGE—Catholic Archdiocese of Milwaukee, 2000 W. Wisconsin Ave., Zone 3, St. Aemilian Orphanage bldgs., $1,000,000.

Que., Montreal—HOUSING—Continental Housing Corp., Sun Life Bldg., Montreal, Que., plans by P. Paquette, 3100 Belanger St., Montreal, Que., 104 additional housing units on 31, 232-33-35 Aves. between Beaubien and St. Zotique Sts., Rosemount, Approx. $900,000.

INDUSTRIAL BUILDINGS

▲ Ga., Rome—POWER PLANT—Georgia Power Co., 75 Marietta St. Atlanta, Ga., electric power plant on Cossa River, $20,000,000.

Ind., Auburn—PLANT—Auburn Foundry Co., Auburn, Ind., plant, $800,000.

Ind., Salem—PLANT—Wel-Met Co., Kent, O., plant, $450,000.

▲ Miss., Vicksburg—PLANT—Spencer Chemical Co., Pittsburg, Kan., steel anhydrous ammonia plant incl. office, $15,000,000. Certificate of Necessity granted.

▲ N. Y., Tonawanda—PLANT FOUNDRY—General Motor Div. of General Motors Corp., General Motors Bldg., Detroit, Mich., plans by H. E. Beyster & Assoc., Inc., engrs. and archts., Industrial Bank Bldg., Detroit, Mich., 360,000 sq. ft., addn. at back of present Chevrolet-Tonawanda Mfg. plant; approx. 370,000 sq. ft., foundry to make castings for aviation engrs., approx. 230,000 sq. ft. forge plant, for aviation engines, power plant enlargement.

O., Dayton—MERCANTILE BLDG.—H. M. Cleaners, Inc., 4149 Linden Ave., mercantile bldg., U. S. Rte. 35, $450,000.

▲ O., Elyria—PLANT—American Radiator & Standard Sanitary Corp., 40 W. 40 St., New York, N. Y. plans by Prack & Prack, Martin Bldg., Pittsburgh, Pa., bldg. for storing warm air heating equipment. $2,000,000. CD 8/14/46.

▲ Okla., Pryor—PLANT—Coronado Mfg. Co., Pryor, liner paper board plant, $3,000,000.

Tex., Bellaire—LABORATORY—The Texas Co., Texas Co. Bldg., Houston, plans by Charles S. Chase, 1309 Anita St., Houston, 2 story 12,000 sq. ft. masonry research laboratory, 1002 N. Rice St. $500,000.

▲ Tex., Houston—LABORATORY—Anderson Clayton & Co., Cotton Exchange Bldg., cotton testing laboratory $2,000,000.

Tex., Houston—WAREHOUSE—Westheimer Transfer & Storage Co., Inc., 2205 McKinney St., warehouse storage units. 7½ acres at Kirby and Danville Sts. $500,000.

Tex., Irving—PLANT—Lloyd A. Fry, Summitt, Ill., plant, $418,700.

▲ Man., Selkirk—PLANT EXPANSION—Manitoba Rolling Mill Co. Ltd., 845 Logan Ave., Winnipeg, two 70x420 and 70x200 ft., steel electrical furnace bldgs. Approx. $1,000,000. H. A. Mackay, c/o owner, engr.

Man., Winnipeg—PLANT—Massey-Harris Co. Ltd., 915 King St. W., Toronto, Ont., farm implement plant in western end of city on Ellice Ave. $500,000.

▲ Ont., Beachville—PLANT—Canada Cement Ltd., Phillips Sq., Montreal, Que., cement plant, Approx. $1,000,000.

UNCLASSIFIED

▲† Calif., Richmond—FUEL STORAGE, etc.—Twelfth Naval Dist., Federal Office Bldg., San Francisco, constr. fuel storage and transfer facilities at Point Molate near here, $2,000,000.

▲ Illinois—RURAL DISTRIBUTION LINES—Southeastern Illinois Electric Co-operative, A. F. Lentz, mgr., Harrisburg, extensions and imprvs. to rural distr. sys., incl. 133 mi. new lines in Hamilton, Gallatin, Saline, Hardin, Pope, Franklin, Williamson, and Johnson Counties, $336,911; extens. to serve large industrial users, $235,616 constr. 115 mi. 69 kv transmission lines, $745,000; completion of and imprvt. existing lines, $195,900. CD 2/8/50.

▲ Mich., Port Huron—APRON AND SLIP DOCK—Chesapeaks & Ohio R.R. Co., L. T. Nuckols, ch. engr., 823 E. Main St., Richmond, Va. apron and slip dock facilities for ferrying freight cars between Port Huron and Sarnia, $1,500,000.

Mississippi — RURAL DISTRIBUTION LINES — Magnolia Electric Power Assoc., McComb, 269 mi. rural distr. lines, other imprvs., Pike Co., $495,000, Bowman & Bowman, Greenwood, consult. engrs. CD 10/22/48.

▲ Texas, New Mexico, Arizona, California — PIPE LINE—Gilmore Refineries, Inc., Long Beach Calif. and Progress Pacific Pipe Line Co., Los Angeles, Calif., oil products pipe line carrier between Odessa, Tex. and Los Angeles, Calif., parallelling proposed crude oil line, $45,000,000. 24 in. crude oil pipe line carrier from Odessa, Tex. to Los Angeles, Calif., $75,000,000.

▲ Tex., Fort Worth—PLAYGROUNDS, etc.—City, City Hall, bond election September 11, recreation, playgrounds, facilities, $500,000; North Side park development $250,000; West Side park development, $250,000; South Side park development, $250,000; East Side park development, $250,000. C. M. Thelin, Pub. Wks. Dir. Eng. CD 7/24.

▲ Tex., Fort Worth—SIGNS SYSTEM, etc.—City, City Hall, bond election September 11, street signs sys., $250,000; electric traffic signal sys., $450,000; fire department electric alarm sys. extens. and imprvs. $500 000; street lighting, $500,000. C. M. Thelin, Dir. Pub. Wks. Eng. CD 7/24.

CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS

August 14 Massachusetts August 15 Rhode Island

BIDS ASKED—BUILDINGS

Mass., Quincy—SCHOOL—B.A. 8/15—City, Pub. Wks. Office, 61 Sanvile Row, Trade School addn., $500,000. Plans deposit $50, Cram & Ferguson, 24 Boylston St., Boston, archts. CD 10/9/50.

Conn., New Britain—SCHOOL—B.A. 9/6—City, Smith St. School. Plans deposit $50. CD 7/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. Pub. Wks., 100 Nashua St., Boston,
America Bridge Co., 1414 Statler Bldg., Boston, Mass. CA $2,473,845, steel superstructure for embankment road, connection Boston Central Artery, Proj. E2, Suffolk Co. CD 5/23, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Consolidated Constr., Inc., 807 Congress St., Portland, Me. CA $673,000. STUDENT UNION BLDG., ORONO, ME. University of Maine, Bd. Trustees, Orono, Me. Bids July 10. CD 7/6.

Carl Beaudette, Southbridge Rd., Oxford, Mass. CA $700,000. 120 RESIDENCES, OXFORD, MASS. Oxford Home Builders, Inc., Oxford, Mass.

▲ **Thomas Worcester, Inc.**, 84 State St., Boston, Mass. CA $1,000,000. design and constr. FACTORY, STONEHAM, MASS. Sylvania Electric Products, Inc., 70 Forsyth St., Boston, Mass. (Correction—site changed). CD 7/20 under Woburn, Mass., Contract Awarded.

▲ **William J. Lyons Constr. Co., Inc.**, 9 Mechanic St., Norwalk, Conn., CA $1,460,000, HOSPITAL wing, NORKALK, CONN. Norwalk Hospital, Norwalk, Conn. Bids July 9. CD 7/17, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES

August 21 New Jersey

STREETS AND ROADS

August 16 New Jersey August 17 Pennsylvania

BIDS ASKED—BUILDINGS

▲† **Md., Cascade**—BUILDINGS—B.A. 8/15—U. S. Eng., First and Douglas Sts. N. W., Wash., D. C., general rehabilitation present buildings, Camp Ritchie, $7,000,000.

▲ **N. J., Flemington**—HOSPITAL, etc.—B.A. 8/15—Hunterdon Medical Center, Inc., 1 Main St., hospital and medical center. $1,800,000. CD 8/23/50.

SOON LETS CONTRACT—BUILDINGS

▲ **Pa., Pittsburgh**—NURSES HOME—Montefiore Hospital, 5 Ave., soon lets contract 12 story nurses home, $1,100,000. Ritchie & Assoc., 38 Newberry St., Boston, Mass., archts. CD 12/29/49.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Spearin, Preston & Burrows, Inc.**, 50 Church St., New York 7, N. Y., LB, $1,229,025, storm trunk sewers and appurtenances Springfield Blvd., NEW YORK. President Queens Boro, Boro Hall, 120-55 Queens Blvd., Kew Gardens, N. Y. Bids July 27. CD 7/19.

† **Charles F. Vachris, Inc. and Alan Piff, Inc.**, 9024 Ditmas Ave., Brooklyn, 36, N. Y., CA, $762,000, resurface Piers 1 and 3 and concrete deck at Naval Ammunition Depot, NOY 26785, Spec. 2880, EARLE, N. J. P. Wks Office, Third Naval Dist., 90 Church St., New York, N. Y. Bids June 25, awarded June 29. CD 6/14.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, Pa.
Keelor Constr. Co., Perkiomenville, Pa., LB, $389,753, crushed aggregate base and bit. 19,735 ft. hy. incl. 3 bridges T. R. 100 and 29, Washington and Hereford Twps., Berks Co.
Putnam & Greene, Inc., P. O. Box 512, Sta. A, Fort Wayne, 3, Ind., LB, $202,104, crushed aggregate base hy. with bit. 16,886 ft. L. R. 857 (11), Glen Hope Boro, Beccari and Jordan Twps., Clearfield Co.
Penoyer Contg. Co., Inc., P. O. Box 85, Bigler, Pa., LB, $176,439, crushed aggregate base with bit. 12,254 ft. L. R. 17008 (4), Bell Twp., Clearfield Co.
Ralph V. Danield and Troutman Bros., Camp Hill, Pa., LB, $202,243, crushed stone base with bit. 7,272 ft. L. R. 22031 (3), Wiconisco Twp., Dauphin Co.
H. J. Williams Co., Inc., Sumner St. and W. M. R. R., York, Pa., LB, $559,909, crushed stone base with bit. 41,159 ft. T. R. 340, E. Lampeter, Leacock and Salisbury Twps., Lancaster Co.
Conestoga Constr. Co., Rohrerstown, Pa., LB, $138,858, crushed stone base hy. with bit. 5,324 ft. and one I-beam bridge, T. R. 897, East Earl & Brecknonk Twps., Lancaster Co.
Rosser Constr. Co., P. O. Box 72, Mount Joy, Pa., LB, $141,224, crushed aggregate base with bit. L. R. 170 Spur (1), city of Hazelton, W. Hazelton Twp., Luzerne Co.
The Conduit & Foundation Corp., 770 S. Schuylkill Ave., Phila., Pa., LB, $4,727,982, divided roadway c. conc. 11, 321 ft. incl. 4 bridges L. R. 769 (28), section of Schuylkill Expressway, Lower Merion Twp., Montgomery Co.
F. D. Kessler, Inc., Northumberland, Pa., LB, $102,769, crushed aggregate base with bit. 2,200 ft. T. R. 142 Schenandoah Boro. Bids July 27. CD 6/27.
▲ **Rust Eng. Co.**, Rust Bldg., 6 Ave., Pittsburgh, Pa., CA $500,000, industrial waste PLANT, DRAVOSBURG, PA. United States Steel Co., Frick Bldg., Pittsburgh, Pa.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Ione Homes**, c/o Alvin Cassens, Jr., archt., 116-55 Queens Blvd., Forest Hills, N. Y. Owner Builds. $1,000,000. 146 HOUSES on Mart at Thomas and Stewart Aves., BETHPAGE, N. Y.
▲ **Riden Constr. Co.**, c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn, Zone 2, N. Y. Owner Builds. $1,152,000. 6 story APARTMENT Avenue Z and E. 13 St., BROOKLYN, N. Y. CD 4/24.
▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y. CA. $1,157,000. general constr. P. S. 187 SCHOOL, Marathon Parkway from 61 to 63 Aves., DOUGLASTON, N. Y. Supt. School Buildings, Design & Constr., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids July 3.
▲ **Cauldwell-Wingate Co.**, 101 Park Ave., New York, 17, N. Y. CA $4,500,000 165-bed HOSPITAL, William Beekman and Spruce St., NEW YORK, N. Y. Beekman-Downtown Hospital, 115 Beekman St., New York, N. Y., Lorimer & Rose, 254 W. 54 St., New York, 19 N. Y., archts. Former contract rescinded. CD 10/1/46, under CA.
▲ **Psaty & Fuhrman, Inc.**, 369 Lexington Ave., New York 17, N. Y., CA. $1,510,000. P.S. 6 SCHOOL, Madison Ave. between 81 and 82 Sts., NEW YORK,

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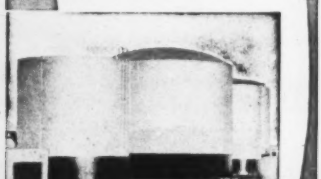

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District Branch Offices
S. T. Burton Co., 228 N. LaSalle St., Chicago 1, Ill.
George R. Lewis Co., 2036 Queen Ave. S., Minneapolis 5, Minn.
B. H. Mueller Co., 6625 Delmar Blvd., St. Louis 5, Mo.
Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
Philip D. Barnard, 2036 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1755 W. 13th Ave., Denver 4, Colo.

N. Y. Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids July 10. CD 7/13, under LB.

Arcadia Homes, c/o Matern & York, archts, 90-04 161 St., Jamaica, N. Y. Owner Builds. $500,000. 38 HOUSES on plot at Revere Rd. and Orchard St., PORT WASHINGTON, N. Y.

Roy Ranch Homes, c/o Alwin Cassens, Jr., archt., 116-55 Queens Blvd., Forest Hills, N. Y. Owner Builds. $700,000. 52 HOUSES on plot at Seaford Ave., east of Willoughby Ave., SEAFORD, N. Y.

▲ **Gordon & Fichtenbaum,** c/o John W. Burton, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds, $1,750,000 100 one family HOUSES on 25 acre site at Jackson Ave. and Hillside Lane, north of Jericho Turnpike, SYOSSETT, N. Y.

† **Hall-Meslin Co.,** 291 Bergen Ave., Jersey City, N. J., CA, $715,175, locomotive overhaul and repair shop and locomotive repair shop addn., Pier Area, Naval Ammunition Depot, Spec. 28191, EARLE, N. J. Third Naval Dist., 90 Church St., New York, 7, N. Y. Bids June 13, awarded June 27. CD 6/5.

▲ **Catalina Ranch Homes,** c/o Samuel Paul Assocs., archts., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds, $1,700,000, 117 HOUSES on 24 acre tract on Newbridge Rd. north of Jerusalem Ave., EAST MEADOW, N. J.

▲ **Radiant Builders Inc.,** c/o Richard Fitzsimons, 93 Main St., West Orange, N. J. Owner Builds, $3,000,000, 200 HOUSES on 40 acre tract off Route 202 between Route 6 and Boonton, PARSIPPANY-TROY HILLS, N. J.

▲ **Rust Engr. Co.,** Rust Bldg., 6 Ave., Pittsburgh, Pa., CA, $3,000,000, 1 story, steel, brick, concrete chemical PLANT addns., alterations, BRIDGEVILLE, PA. American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y.

H. B. Alexander & Son, 315 Vaughn St., Harrisburg, Pa., CA, $564,460, general contract, 75-unit public HOUSING, 22 and Herr Sts., HARRISBURG, PA. Harrisburg Housing Auth., City Hall, Harrisburg, Pa. Bids June 20, awarded July 26. CD 7/6, under LB.

▲ **Branna Constr. Co.,** Bessemer Bldg., Pittsburgh, Pa., LB $1,994,000, Est. $2,500,000. 1 story, brick, glass Junior-Senior HIGH SCHOOL, McCandless Twp., PITTSBURGH, PA. North Allegheny Joint Auth., West View, Pa. Bids July 9 CD 6/28.

▲ **Steiner Constr. Co.,** 2122 Maryland Ave., Baltimore, Md. CA imprvs., renovations at Locust Point TERMINAL, incl. remodeling 10 piers and adjacent; **Empire Constr. Co.,** 31 S. Calvert St., Baltimore, Md., CA grading, drainage. BALTIMORE, MD. Total cost $1,000,000. Baltimore & Ohio R. R. Co., A. C. Clarke, ch. engr., Charles and Baltimore Sts., Baltimore, Md.

▲ † **Jos. Nebel Co.,** 2142 P St. N. W., Wash., D. C. LB, $2,735,000. ANIMAL BLDG. at National Institutes of Health, Proj. 18-063, BETHESDA, MD. General Services Admin., Pub. Bldgs. Service, 19 and F Sts. N. W., Wash., D. C. Bids July 31. CD 6/25.

▲ **John McShain, Inc.,** 3 W. Franklin St., Baltimore 1, Md. CA $2,000,000-$3,000,000. 3 and 4 story, brick, cinder block, rein.-con. Stella Maris HOSPITAL, Dulaney Valley Rd., TOWSON, MD. R. C. Archdiocese of Baltimore, Archbishop Francis P. Keough, Cathedral and Mulberry Sts., Baltimore, Md. Van Rensselaer Saxe, 1701 St. Paul St., Baltimore, Md., struct. engr. Henry Adams, Inc., 2315 St. Paul St., Baltimore, Md. mech. engr. Bids July 19. CD 7/6.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
August 17 Kentucky, Tennessee
STREETS AND ROADS

La., Alexandria—B.A. 8/20—City, City Hall, pave Warshauer, Nelson, Dennis and Monroe Sts. CD 11/17/49.

N. C., Reidsville—B.A. 8/21—City, WW imprvs., Platt & Davis, Box 971, Durham, N. C., engrs.

BIDS ASKED—BUILDINGS

Va., Norfolk—SCHOOL—City, B.A. 8/19—Administrative Office, Bank and Charlotte Sts., elementary school. Plans deposit $25. Vernon A. Moore, 716 W. 20 St., archt.

Ky., Owensboro—FACTORY—B.A. 8/20—Elco Shutter Co., Owensboro, factory to mfg. shutters, $750,000. Plans deposit $25, Sam H. Molloy, Republic Bldg., Louisville, archt.

† Ga., Fort Benning—COMMISSARY BLDG. ADDN—B.A. 8/21 U. S. Eng., Post Office Bldg., Savanah, 24x200 ft. Commissary Bldg. 108, addn, Eng 09-133-52-9 Plans deposit $10.

W. Va., Wierton—PLANT—Bids Asked—Signode Steel Strapping Co., 26 N. Western St., Chicago, 47, Ill., steel plant addn., $500,000. Shaw, Metz & Dolio, 208 S. LaSalle St., Chicago, 4, Ill., archts. CD 2/7.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † **Christian & Bell Co.,** 674 Spring St. N. W., Atlanta, Ga., LB, $1,058,222, test facilities, MACON, GA. Purch. & Contg. Office, Warner-Robins Air Force Base, Macon, Ga.

▲ FLORIDA—State Rd. Dpt., Palm Beach County Court House, West Palm Beach.

Duval Eng. & Constr. Co., P. O. Box 1588, Jacksonville, Fla., LB, $867,156, grading, paving, overpass, Road 115 between point approx. 1 mi. south of Beach Blvd.

and north Atlantic Blvd., Job 7204-179; LB $189,490, grading, paving Road 105 on Herksher Dr., Job 7225-111, both Duval Co.

Faulk & Coleman Constr. Co., 4 Points Woodville Hy., Tallahassee, Fla., LB $461,373, paving Road S 367 from Shell Point north of Road 365 Job 5955-150, Wakulla Co.

Brinco, Inc., P. O. Box 2209, Tampa, Fla., LB $323,915, hydraulic embankment, paving Road A1A, between point approx. 2e9.23 ft. south of Lantana Ave. and point approx. 2.064 mi. north, Job 9306,114, Palm Beach Co.

Smith Eng. & Constr. Co., W. Pensacola St., Pensacola, Fla., LB $67,340, paving, Road S 289-A between Road 5 and point approx. 0.75 mi. northeast, Job 4855-150; Road S 295-A, between Road 298 and Road 292, Job 4856-150 Road S 298-A between Road 298 in Pensacola and Road 208 west of Pensacola, Job 4857-150, Escambia Co.

Coggin & Deermont, Chipley, Fla., LB $84 651, grading, paving Road 30 from point approx. 2.25 mi. northeast of Carrabelle east city limits to point approx. 1,538 mi. northeast, Job. 4904-108, Franklin Co.

Rich Constr. Co., Brooksville, Fla., LB $84,825, resurf. Road 12 from Bristol northeast to Gadsden Co. line, Job 5602-107, Liberty Co.

S. M. Wall, 801 W. Masonic St., Gainesville, Fla., LB $61,863, reconstr. roadway and pavement Road 26 sections between Orange Height and Melrose, Job 2613-105, Alachua Co.

Cone Bros. Constr. Co., P.O. Box 1301, Tampa, Fla., LB $219,359, resurf. Road 26, between State Rd. 55 and Alachua Co. line, Job 3101-106, Gilchrist Co.

W. H. Armston Co., Inc. Dunedin, Fla., LB $106,521, grading, paving, drainage structures, Road 500, from point approx. 2.5 mi. northwest of Blichton to point approx. 1.581 mi. northwest Job 3607-108, Marion Co. Bids July 24. CD 7/16.

LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

T. L. James & Co., Inc., Ruston, La., LB $664,346. bit. wearing course 13.527 mi., Calhoun-Ruston Hy., State Rte. 4, S.P1-09-23 and 1-08-11; F. A. Proj. F 110 (6), Ouachita and Lincoln Parishes. Bids July 25. CD 7/2.

BUILDINGS

LOW BIDS AND CONTRACTS

Irons & Reynolds, Inc., 1724 H St. N. W., Wash. D. C. CA $624,777. PHYSICAL EDUCATION and CLASSROOM bldg., Mary Washington College, FREDERICKSBURG, VA. State of Virginia, Richmond, Va. CD 7/18, under LB.

▲ **McCloskey Co.**, Liberty and Denny Sts., Pittsburgh, Pa., CA, $2,000,000, three 1 story, 150x400 ft., steel frame, rein.-con. COIL and EVAPORATOR bldgs., NATRIUM, W. VA. Pittsburgh Plate Glass Co., Southern Alkali Corp., 4337 Fifth Ave., Pittsburgh, Pa.

▲† **Conn Structors**, Miami, Fla., CA., $1,288,151, WAREHOUSE, Spec. 2941e, CHERRY POINT, N. C. P Wks. Office, Box 365, Naval Base, S. C. Bids June 6. CD 5/16.

▲† **Thompkins-Wunderlich Co.**, 907 16 St., N. W. Wash. D. C. LB. $2,327,744, construct tuberculosis HOSPITAL Bldg. 21 for Veterans Hospital, incl. patients tunnel. Spec. No. 4120, SALISBURY, N. C. Veterans Admin., Munitions Bldg., Wash. 25, D. C. Bids July 24. CD 5/31.

Riscon Constr. Co., 149 E. Bay St., Charleston, S. C. LB $524,555. LABORATORY BLDG., CHARLESTON, S. C. Medical College of State of South Carolina, Charleston S. C. Bids July 24. CD 6/13.

▲ **MacDonald Eng. Co.**, 188 W. Randolph St., Chicago 1, Ill., CA, $4,600,000 cement PLANT, HARLEYVILLE, S. C. Carolina Giant Cement Co., 117 S. 17 St., Phila., Pa. Awarded July 9. CD 2/9.

Knox Corp., Thomson, Ga., CA. approx. $600,000, 108 APARTMENT UNITS, AUGUSTA, GA. Georgian Apartments, c/o contractor.

▲ **Sanford Kay Constr. Co.**, 420 Lincoln Rd., Miami Beach, Fla., CA, $3,200,000 HOTEL, MIAMI BEACH, FLA. Ocean Front Hotel Inc., c/o contractor.

▲ **Hodo-Weaver Mortgage Co.**, 2031 First Ave. N., Birmingham, Ala. Owner Builds. $1,500,000. 200 HOMES, PASCAGOULA, MISS.

▲ **Babcock & Wilcox Co.**, 85 Liberty St., New York 6, N. Y. Separate Contracts. $2,500,000 boiler parts mfg. PLANT, WEST POINT, MISS.

▲ **J. G. White & Co.**, 37 Wall St., New York, N. Y. CA $15,000,000. expand soda ash PLANT, BATON ROUGE, LA. Solvay Process Div., Allied Chemical & Dye Corp., 61 Broadway, New York, N. Y. CD 2/23.

▲ **Stone & Webster Engineering Corp.**, 49 Federal St., Boston, Mass. CA $1,000,000. design and construct electric generating PLANT, LAFAYETTE, LA. Gulf State Utilities Co., c/o contractor.

▲ **Morton C. Tuttle Constr. Co.**, 862 Park Square Bldg., Boston, Mass. CA $3,200,000. MILL addn., MONROE, LA. Brown Paper Mills, c/o contractor.

▲ **City, City Hall**, Chattanooga, Tenn. rejected bids July 5, Howard HIGH SCHOOL, L.B. $2,555,900. CHATTANOOGA, TENN. CD 7/11. under LB.

W. F. Holt & Sons, 1531 Demonbreun St., Nashville, Tenn. CA $599,274. HIGH SCHOOL and GYMNASIUM, MADISON, TENN. Davidson Co. Bd. Educ., Court House, Nashville, Tenn. Bids July 26, awarded July 27. CD 7/23.

▲ **Dougherty-Liddell**, 1360 E. McLemore St., Memphis, Tenn. CA $2,000,000. 9 story, brick, concrete, steel BANK addn., MEMPHIS, TENN. Union Planters Bank, Memphis, Tenn. Hanker & Hever, Commercial Title Bldg.

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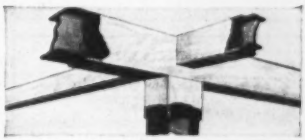

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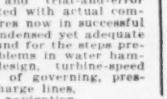

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MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
August 15 Michigan
STREETS AND ROADS
August 14 Indiana, Ohio, Wisconsin
August 15 Michigan

BIDS ASKED—BUILDINGS

Mich., Portage—SCHOOL—B.A. 8/22—Portage Twp., Robert L. Warner, secy., 2 story, bsmnt., brick, steel high school addn., $500,000. Plans deposit $25 refundable. M. C. J. Billingham, 211 Woodward St., Kalamazoo, archt. CD 2/2.

Mich., Adrian—FACTORY—Bids Asked—Gerity-Michigan Corp., James Gerity, pres., East Beecher St., 1 story, 80x260 ft., 45 ft. high masonry defense plant, $525,000, Smith-Hinchman & Grylls. 800 Marquette Bldg., Detroit, archts. CD 7/11.

SOON LETS CONTRACT—BUILDINGS

Mich., Adrian—FACTORY—Gerity-Michigan Corp., James Gerity, pres., soon lets contract 1 story, 80x260 ft. 45 ft. high factory unit, $525,000, Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit, archts. CD 7/25.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

INDIANA—State Hy. Comn., State House Annex, Indianapolis.

Ralph Rogers & Co., Adams St., Bloomington, Ind., CA $552,821, c. conc. wid'n., bit. resurf. 14.57 mi. State Rd. 445 from junction with State Rd. 54 to Bloomington, Greene and Monroe Counties.

Wayne Paving Inc., 1935 Lincoln Bank Tower Fort Wayne, Ind. CA, $744,515, est. $821,511, c. conc. wid'n. 20.617 mi. and bit. resurf. 23.007 mi. U. S. Rd. 35, State Rds. 3, 7, 9 and 32, Anderson, Muncie and Economy, Madison Delaware and Henry Counties. Bids June 26, awarded July 23. CD 7/27, under LB.

ILLINOIS—State Div. Hys., Springfield,

O'Connor Constr. Co., 320 Reisch St., Springfield, Ill., CA, $789,459, c.conc. 4.27 mi. U. S. 66, Sangamon Co. Bids July 6. CD 7/12, under LB.

▲ **John Doherty,** 7956 S. Vernon St., Chicago, 19, Ill., CA, $1,265,465, auxiliary outlet sewers Emerald and Kerfoot Aves. 2 A. CHICAGO, Ill.: City, City Hall, Chicago, Ill. Awarded July 18. CD 7/10.

▲ † **Walsh Oil Co. and Lincoln Crushed Stone Co.,** Joliet, Ill., CA, $1,238,577, 7 dormitories and mess hall at Chanute Air Force Base, RANTOUL, ILL. Dpt. Air Force, The Pentagon, Wash., D. C. Bids July 24, CD 7/11.

▲ **MICHIGAN**—State Hy. Dpt., 222 Townsend St., Lansing, Zone 13.

Louis Garavaglia, 24241 Mound Rd., Center Line, Mich. LB $1,065,498, est. $960,000. rein.con. steel bridge Warren Ave. over Edsel Ford Expressway, UI B 29 of 82-22-10, C3, Wayne Co.

L. W. Lamb, Holland, Mich., LB $69,906, est. $70,000. temporary bridge, approaches and rein.con., steel bridge M 40 over Dowagiac River, FB 2 of 14-13-1, C2 (F 474), Cass Co. Bids July 25. CD 7/20.

▲ **MICHIGAN**—State Hy. Comn., 222 Townsend St., Lansing.

L. A. Davidson, 5271 Addison St., Detroit, Mich. CA $1,114,781, est. $1,125,000. grade separation carry Grand River Ave. over John C. Lodge Expressway, UI B-9 of 82-22-12, C1 (UI-404 38), Wayne Co. CD 7/19, under LB.

MICHIGAN—State Hy. Comn., 222 Townsend St., Lansing.

Ann Arbor Constr. Co., Ann Arbor, Mich. LB $118,778, est. $120,000. bit. aggregate, conc. surf. 12.85 mi. U. S. 127, M 30-2, C2., Jackson and Hillsdale Counties.

A. A. Asphalt Paving Co., 1044 Haynes St., Birmingham, Mich. LB $93,202, est. $85,000. conc. surf. 4.77 mi. Commerce Rd., CS 63-80, C2 (S 640 2), Oakland Co.

Hertel & Deyo Co., 5205 Division St. S., Grand Rapids, Mich. LB $531,881, est. $540,000. c. conc. 7.33 mi. M 21, F 77-68, C3 F 147 8, F 77-68, C4, F 65 3, St. Clair Co.

Getman Brothers, South Haven, Mich. LB $78,581, est. $50,000, aggregate surf. 0.687 mi. Cork St., CS 39-48, C3 S 231 2, Kalamazoo Co.

Grand Rapids Asphalt Paving Co. 343 Market St. S. W., Grand Rapids, Mich. LB $202,930, est. $200,000, b. conc. surf. 10.5 mi. U. S. 131 and M 91, M 41-3, C2, M 59-2, C3, M 59-18, C3, Kent and Montcalm Counties. Bids July 25. CD 7/20.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **Carmichael Constr. Co.,** 148 E. Miller St., Akron, O. CA. Total est. $1,250,000, incl. machinery, etc. 67x275 ft. FACTORY addn., to mfg. equip. for rubber industry, AKRON, O. McNeil Machine & Engineering Co., 96 E Crosier St., Akron O.

Frank Messer & Sons, Inc., 4612 Paddock St., Cincinnati, O. CA $865,000 general instr. two RESIDENCE HALLS between Fisher Hall and the Pines, OXFORD, O. Bd. Trustees, W. P. Roudebush, secy., Miami University, Oxford, O. Bids June 1, awarded July 29. CD 5/16.

Severs-Williams Co., Washington Court House, O. CA $598,000. general constr. grade SCHOOL, SPRINGFIELD, O. Bd. Educ., Springfield, O. CD 3/9/49.

▲ **John Griffiths & Son Co.,** 228 N. LaSalle St., Chicago, 1, Ill., CA, $3,500,000, POWER PLANT, MISHAWAUKA, IND. U. S. Rubber Co., 1230 Avenue of the Americas, New York, N. Y. Buddy Benjamin & Assocs., 2210 Park St., Detroit, Mich., engrs. Awarded July 23.

▲ **Hagerman Constr. Co.,** 402 E. Superior St., Fort Wayne, Ind., CA, $2,500,321, general contract; **Hipskind Plumbing & Heating Co.,** 1425 Winter St., Fort Wayne, Ind., $698,480, heating, plumbing and ventilating, 4 story, brick, stone, rein.-con., structural steel HOSPITAL addn., FORT WAYNE, IND. Parkview Hospital, C. H. Matson, chn. Bldg. Comn., E. State Blvd. and Randle'a Dr., Fort Wayne, Ind. Bids July 3, awarded July 28. CD 6/29.

Arnold Constr. Co., 4034 W. 63 St., Chicago, 29, Ill., Owner Builds, $600,000, 60 RESIDENCES near Crawford and 55 to 59 Sts., CHICAGO, ILL. Floyd Evans, 8217 S. Prairie St., Chicago, Zone 19, Ill., archts. Awarded July 20.

▲ **Sherman Olson Co.,** 600 W. Jackson St., Chicago, 6, Ill., CA, $1,500,000, PRINTING PLANT and OFFICE, CHICAGO, Ill. Rand McNally & Co., 536 S. Clark St., Chicago, 5, Ill. Graham Anderson, Probst & White, 80 E. Jackson St., Chicago, 4, Ill., archts. Awarded July 23.

▲ **Austin Co.,** 510 N. Dearborn St., Chicago, 10, Ill., CA, $6,000,000, design and construct REFINERY bldgs. CHICAGO, ILL. Southern Cotton Oil Co., 4401 W. 31 St., Chicago, 23, Ill. Awarded July 23.

Crestwood Homes, Inc., 4100 Ogden St., Downers Grove, Ill., Owner Builds $857,000, 90 HOMES in Downers Grove area, DOWNERS GROVE, ILL. Albert H. Nemoede, 5106 Main St., Downers Grove, Ill., archt. Awarded July 16.

Contractors & Builders, Inc., 228 N. La Salle St., Chicago, 1, Ill., CA, $900,000, eighty 2 story APARTMENTS. incl. 160 units in northwestern section of SKOKIE, ILL. Co-operative Home Builders, 228 N. La Salle St., Chicago, 1, Ill. Rosen & Horwitz, 53 W. Jackson St., Chicago, 4, Ill., archts. Awarded July 24.

Peters Constr. Co., 2640 N. Humboldt Ave., Milwaukee, 12, Wis., CA, $500,000, 3 story, 90x380 ft., steel PLANT and OFFICE, MILWAUKEE, WIS. A. O. Smith Corp. 3533 N. 27 St., Milwaukee, 16, Wis. Grassold & Johnson, 734 N. Jefferson St., Milwaukee, 2, Wis., archts.

▲ **P. J. Nickel Co.,** Ironwood, Mich., LB, $1,008,327, general contract, Junior and Senior High SCHOOL, ROTHSCHILD, WIS. Joint School Dist. 1, Rothschild, Wis. Bids July 21. CD 6/22.

▲ **Siesil Constr. Co.,** 514-E. Ogden Ave., Milwaukee, Wis., CA, $1,917,403, general contract, CUSTODIAL bldgs., etc. at Southern Colony and Training School, UNION GROVE, WIS. State Dpt. P. Welfare, Madson, Wis. Bids June 19. CD 7/3, under LB.

Birchard & Roberts, 2323941 Kean St., Dearborn, Mich. CA $500,000. 2 story, bsmnt., brick, steel nigh SCHOOL, Ford Rd., DEARBORN, MICH. City, Albert W. Rider, secy., School Dist., Dearborn, Mich. Bids July 11.

Strom & Strom, Inc., 1770 6 St., Muskegon, Mich. LB $639,324. brick, steel, concrete HOSPITAL, IONIA, MICH. Ionia Co. Memorial Hospital, Ionia, Mich. Bids July 24. CD 6/27.

▲ **Blue Ribbon Builders, Inc.,** 1500 E. High St., Lansing, Mich. CA $1,000,000. 100 ranch HOMES, Schoolview sub-division, LANSING, MICH. Real Estate Investment Co., 715 Bank of Lansing Bldg., Lansing, Mich.

▲ **Turner Constr. Co.,** 420 Lexington Ave., New York 17 N. Y. and **Barton-Malow Co.,** 2631 Woodward St., Detroit, Mich. CA Approx. $6,000,000. 1 and 2 story, 400,000 sq. ft. PLANT addn. to produce aircraft engine fuel injection sys., YPSILANTI, MICH. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich. archt. and engr. CD 7/5.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
August 17 Kansas

▲ **Kan., Wichita**—BUILDINGS—B.A. 8/14—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., buildings, Wichita Air Force Base, KCM 52-6. Group B. CD 5/22.

Kansas—RURAL DISTRIBUTION LINES—B.A. 8/15—Jewell Mitchell Electric Co-operative, Mankto. 526.4 mi. rural distr. lines, $600,000, Raymond H. Reed & Co., Columbus, Neb., engrs. CD 3/21.

BIDS ASKED—BUILDINGS

Kan., Leavenworth—HOTEL—B.A. 8/14—Leavenworth Community Hotel Co., Leavenworth, hotel, $650,000, Design, Inc., 906 Sidney St., St. Louis, Mo., archt. CD 11/13/50.

Tex., Carthage—COURT HOUSE—B.A. 8/21—Panola Co., Court House, court house and jail, $500,000. Extended date. Plans deposit $25, Preston M. Geren, 905 N. P. Anderson Bldg., Fort Worth, archt. CD 7/19.

Minn., Minneapolis—SCHOOL—B.A. 8/22—Bd. Educ., M. C. Robinson, clk., E. H. Enger, archtural engr., 807 N.E. Broadway, 1 story, 448 ft. long southwest grade school between 56 and 57 Sts., Russell and Sheridan Aves. South $895,000, Magney, Tusler & Setter, 202 Foshay Tower, archts., Perkins & Will, 309 W. Jacksons St., assoc. archts. CD 6/25.

Mo., Milan—HOSPITAL—B.A. 8/23—Sullivan Co., Milan Hospital, $500,000, Extended date. Hewitt & Royer, 1203 Locust St., Kansas City, Mo., archts. CD 7/26.

▲ **Tex., Liberty**—PLANT—Bids Asked—Texas Gulf Sulphur Co., Liberty, expansion sulphur mining plant, $3,000,000. CD 7/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Associated Natural Gas Co.,** 523 E. Malone Ave., Sikeston, Mo. Owner Builds, approx. $2,491,042, pipe lines in connect with 14 towns in southeastern MISSOURI. (Correction—address of owner). CD 6/4.

▲† **Western Contg. Co.,** Benson Bldg., Sioux City, Ia. LB $1,933,025, runway and taxiway, extens. Wichita Air Force Base, KCM 52-5, WICHITA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. Bids July 16. CD 5/22.

▲ **Peter Kiewit Sons' Co.,** Omaha National Bank Bldg., Omaha, Neb. CA $2,062,233, flight hangar apron, WICHITA, KAN. Boeing Airplane Co., Wichita Div., Wichita, Kan. CD 7/26, under LB.

▲† **Lippert Bros.,** 2800 N. Santa Fe St., Oklahoma City 5, Okla. LB $2,475,476, est. $2,927,321. 1 story warehouse and storage bldg., at Tinker Field, OKLAHOMA CITY, OKLA. U. S. Eng.; Box 61, Tulsa, Okla. Bids July 26. CD 7/19.

▲ **Houston Contg. Co.,** National Standard Bldg., Houston, Tex. CA $2,175,000, 96 mi. 16 and 18 in. natural gas line between Marshall, Tex. and Ruston, La. TEXAS and LOUISIANA. Mississippi River Fuel Corp., 407 8 St., St. Louis, Mo. CD 6/13.

▲ **TEXAS**—State Hy. Comn., Austin, Tex.

Austin Road Co., Box 1590, Dallas, Tex. CA $1,013,608, c. conc. 8.09 mi. Hy. U. S. 75, Proj. FI 466 (24), Galveston Co.

R. C. Buckner, P.O. Box 609, Jacksonville, Tex. CA $578,112, flexible base, c. conc. 7.904 mi. Hy. FM 366, Proj. R 667-2-1, Jefferson Co.

Heldenfels Bros., Rockport, Tex., CA $559,208, base, asph. surf. 8.394 mi. Hy. U S 181, Proj. F 266 (2), Karnes Co. Grand total $2,150,928. Awarded July 27. CD 7/23 under LB.

▲ **TEXAS**—State Hy. Comn., Austin,

Holland Page, P.O. Box 1181, Austin, Tex. CA $827,802, c. conc. 6.474 mi. Hy. US 75, Proj. FI 466 (20), Harris Co.

McKown & Sons and Pace & Spence Co., P.O. Box 785, Austin, Tex., CA $964,981, base, hot mix b. conc. 2.235 mi. Hy. US 81, Proj. UI 200 (9), Travis Co. Awarded July 27. CD 7/20, under LB.

▲† **Trotti & Thompson,** Beaumont, Tex. CA $2,870,000, seawall exten. CIVENG 41-243-51-91, TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. CD 7/26 under LB.

G. W. Mitchell, American Hospital & Life Insurance Bldg., San Antonio, Tex. CA $776,197, est. $1,000,000, airport terminal, SAN ANTONIO, TEX. City, City Hall, Military Plaza, San Antonio, Tex. CD 7/26, under LB.

▲† **Rob. E. McKee Gen. Contr., Inc.,** Box 637 Los Alamos N. M., CA, $1,813,700, TA-16 service area Proj. N. Phase A, guard station utility lines, power and steam lines, shop, administration bldg., etc., Inv. No. 291-51-107, LOS ALAMOS, N. M. U. S. Atomic Energy Comn., Los Alamos, N. M. Bids May 29, awarded July 25. CD 4/18.

BUILDINGS

LOW BIDS AND CONTRACTS

Standard Constr. Co., 607 Hamm Bldg., St. Paul, Minn. LB $734,434, general constr. 1 story SCHOOL, ST. PAUL PARK, MINN. Bd. Educ., M. Oltman, clk., St. Paul Park, Minn. Bids July 24. CD 7/9.

Walden, Fulton & Payne, P.O. Box 628, Lubbock, Tex. LB $667,232, est. $724,125, two masonry BUILDINGS, renovating 2 masonry BUILDINGS, Pantex Ordnance Plant, Inv. 291-51-144, AMARILLO, TEX. U. S. Atomic Energy Comn., Chief Contract Div., Jos Turan, Los Alamos, N. M. Bids July 24. CD 7/6.

▲ **J. M. Odom,** P.O. Box 774, Austin, Tex. CA $1,090,000, South Austin High SCHOOL, AUSTIN, TEX. Austin Independent School Dist., Austin, Tex. Awarded July 24. CD 7/24, under LB.

Southland Terrace, Inc., 801 Commerce St., Fort Worth, Tex. Owner Builds. $345,000. 40 single family DWELLING units, Expressway and Seminary Dr., FORT WORTH, TEX. CD 7/24/50.

▲ **H. K. Ferguson Co.,** 2620 S. Main St., Houston 2, Tex. CA $1,254,799, design and construct ferromanganese and ferro-silicon PLANT, HOUSTON, TEX. Tennessee-Texas Alloy & Chemical Corp., c/o Tennessee Products & Chemical Corp., American National Bank Bldg., Nashville, Tenn.

Allison & Bauman, P.O. Box 6, Grand Junction, Colo., LB $698,708, constr. 2 and part 3 story, full bsmnt., 12,800 sq. ft., 1st and 2nd stories and 500 sq. ft. in third story Mercy HOSPITAL addn., DURANGO, COLO. Sisters of Mercy, Durango, Colo. Bids July 19. CD 7/3.

FAR WEST

LOW BIDDERS—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
August 17 Arizona
STREETS AND ROADS
August 17 Arizona August 22, 23 California

BIDS ASKED—BUILDINGS

▲ **Calif., Santa Cruz**—FACTORY—B.A. In August—Wm. Wrigley Jr. Co., 410 N. Michigan St., Chicago, Ill., chewing gum factory, Main St. and W. Cliff Ave. $3,000,000. CD 10/19/50.

▲ **Calif., San Francisco**—SCHOOL—B.A. 8/22—Dpt. P. Wks., City Hall, Bret Harte Elementary School, Griffith and Hollister Sts. $1,000,000. Plans deposit $200. Lewis P. Hobart & Ralph N. Kerr, 525 Market St. San Francisco, archts. CD 9/15/49.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **American Pipe & Constr. Co.,** P.O. Box 3428, Terminal Annex, Los Angeles, Calif., CA, $860,941, earthwork, pipe lines, etc. various laterals Unit 1, Exeter Irrigation Dist., Friant-Kern Canal, Central Valley Proj., Spec. DC 3415, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lindsay, Calif. Bids June 12, awarded July 24. CD 6/20.

▲ **CALIFORNIA**—State Div. Hys., P, Wks. Bldg., Sacramento,

Fredrickson & Watson Constr. Co., 873 81 St., Oakland, Calif., CA, $1,374,048, new roadway constr. 4.6 mi, between Hopyard Rd. and 2.5 mi. west of Dublin, Alameda Co. Bids July 27, awarded July 25. CD 7/9, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

United Concrete Pipe Corp., Box 425, Baldwin Park, Calif. LB, $2,537,790, grading, constr. 4 grade separation structures and bridge over Rio Hondo to provide freeway with 6-lane roadway on Santa Ana Freeway, Los Angeles Co. Bids July 26. CD 7/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Lembke-Clough & King** P.O. Box 144, Albuquerque, N. M., CA, $1,747,219, est. $1,701,990, group 1 story wood frame BUILDINGS, Alternate Test Site, No. 291-51-139, LAS VEGAS, NEV. U. S. Atomic Energy Comn., Los Olmos, Nev. Bids July 20. Awarded July 24. CD 7/17.

▲† **Zoss Constr. Co.,** Pittock Block, Portland, Ore., LB, $2,737,617. (Low bid delayed thru no fault of bidder). two 1,000x200 ft. WAREHOUSES at Mount Rainier Ordnance Depot, Inv. No. 52-3, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle, 42, Wash. CD 7/30, under LB.

▲ **William Neil Co. Ltd.,** 4814 Loma Vista Ave. Vernon, Calif., CA, $1,364,000, PLANT, ANAHEIM, CALIF. Marda Corp., c/o Northrop Aircraft, Inc., 1001 E. Breakway, Hawthorne, Calif.

▲ **Hal B. Hayes Contractors, Inc.,** 13006 Saticoy St., North Hollywood, Calif., LB, $5,927,845, 712 HOUSING Units INYOKERN, CALIF. Eleventh Naval Dist., 1220 Pacific Hy. San Diego, Calif. Bids July 24.

▲ **Holdener Constr. Co.,** 2608 R St., Sacramento, Calif. LB $1,129,000, Rio Linda Junior High SCHOOL, RIO LINDA, CALIF. Grant Union High School Dist., 1400 Grand Ave., Del Paso Heights, Calif. Bids July 25. CD 7/9.

M & K Corp., Financial Center Bldg., San Francisco, Calif., LB, $968,585, general constr. Proj. 2, Sunnydale SCHOOL, SAN FRANCISCO, CALIF. Dpt. P. Wks., City Hall, San Francisco, Calif. Bids July 25. CD 7/3.

Barrett & Hilp, 918 Harrison St., San Francisco, Calif., LB, $528,800, general constr. SHOP and laboratory at San Jose College, SAN JOSE, CALIF. State Div. Architecture, P. Wks. Bldg., San Jose, Calif. Bids July 24. CD 7/2.

▲ **Barrett & Hilp,** 918 Harrison St., San Francisco, Calif., CA, $4,096,300, O'Connor HOSPITAL, 28 St. bounded by University, Horace and D'Salvo Sts., SAN JOSE, CALIF. Sisters of Charity, O'Connor Hospital, 305 Race St., San Jose, Calif. Bids May 23, awarded July 19. CD 6/1, under LB.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † **S. Macri Constr. Co.,** 311 21 Ave. N., Seattle, Wash., and **A. G. Rushlight,** 55 N. E., Farragut St., Portland, Ore., CA, $1,839,000, est. $1,924,054, water treatment facilities and sewage treatment plant, Inv. No. 51-100, Item 2, Ladd Air Force Base, ALASKA. U. S. Eng. (APO 942, c/o PM Seattle, Wash.), Anchorage, Alaska. Bids July 10, awarded July 18. CD 7/16, under LB.

▲ † **Lytle & Green and S. Birch & Sons,** Anchorage, Alaska, CA, $6,020,000, est. $5,400,000, outside utilities Phase B, Inv. No. 51-105, Elelson Air Force Base, ALASKA, U. S. Eng., New Washington Hotel, Seattle 1, Wash. Bids July 17. CD 7/24 under LB.

† **C. F. Lytle, Green Constr. Co. and S. Birch & Sons,** Anchorage, Alaska, LB, $870,815, est. $611,940, aircraft parking aprons, Inv. No. 595-507-51-121, Elelson Air Force Base, ALASKA, U. S. Eng., New Washington Hotel, Seattle 1, Wash. Bids July 26. CD 7/5.

† **A. J. Hopper Co.,** 243 Langton St., San Francisco, Calif., LB, $924,444, est. $872,648, complete liquid fuel systems at Ocean Dock area, Elmendorf Air Force Base and Fort Richardson, Inv. N. S95-507-51-110, ALASKA. U. S. Eng., Flamingo Room, New Washington Hotel, Seattle 1, Wash. Bids July 25. CD 7/9.

▲† **Lytle-Green Constr. Co.,** 312 Masonic Temple Bldg., Des Moines, Ia., CA, $2,975,000, administration bldg. at international airport, ANCHORAGE, ALASKA Civil Aeronautics Admin., Anchorage, Alaska. Bids June 4. CD 4/2/47.

† **Smith, Brown & Root,** Anchorage, Alaska, LB $729,986, est. $985,533, grading, drainage at terminal yards, ANCHORAGE, ALASKA. The Alaska Railroad, Dpt. Interior, Anchorage, Alaska. Bids July 26. CD 7/13.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Morrison-Knudsen Co.,** Inc., 319 Broadway, Boise, Idaho, CA, $2,763,000, POWER and HEATING PLANT, for Alaska Railroad and Church Electric Coop. Assn., ANCHORAGE, ALASKA. Alaska Railroad, Dpt. Interior, Anchorage, Alaska. Bids June 15. CD 6/26, under LB.

▲ † **J. H. Pomeroy & Co., Inc.,** 333 Montgomery St., San Francisco, Calif., CA, $1,983,000, composite ADMINISTRATION Bldg., Inv. No. S95-507-51-106, FORT RICHARDSON, ALASKA. U. S. Eng., New Washington Hotel, Seattle 1, Wash. Bids July 12. CD 7/18, under LB.

▲† **Grove Shepherd, Wilson and Kruge and Granston, Inc.,** Anchorage, Alaska, LB, $6,320,364, ARMY COMMUNICATIONS STATION, Inv. No. S95-507-51-102, KENAI, ALASKA. U. S. Eng., New Washington Hotel, Seattle, Wash. Bids July 25. CD 7/19.

† **Coryell Constr Co.,** Grosvenor House, Seattle, Wash., CA, $718,652, 50 HOUSING units in two- to six-unit 1 story frame buildings, KETCHIKAN, ALASKA. Alaska Housing Auth., c/o Miller & Ahlson, archts., 1410 Hubbel Pl., Seattle, Wash. Bids July 12. CD 7/18, under LB.

▲† **U. S. Eng.,** New Washington Hotel, Seattle 1, Wash., rejected Bids June 14, PERMANENT HEATING and POWER PLANT, incl. moving equipment from Dutch Harbor, S 95-507-51-94, WHITTIER, ALASKA, L.B. $5,827,000. CD 6/19, under LB.

U. S. POSSESSIONS

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Caribbean Enterprises,** Box 6168, Loiza St. Station, Santurce, Puerto Rico, LB, $1,662,758, four HOSPITALS, VIRGIN ISLANDS. Dist. Eng., Dpt. Interior, Post Office Box NO. 479, St. Thomas, Virgin Islands. CD 6/8.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **McNamara Constr. Co. Ltd.,** 42 Industrial St., Leaside, Toronto, Ont., CA, $1,800,090 dock and terminal facilities for ferry terminal connecting Newfoundland with mainland, PORT AUXBASQUES, NEWFOUNDLAND, Dpt. Transport Hunter Bldg., Ottawa, Ont. Bids July 12, awarded July 30. CD 6/4.

▲ **QUEBEC**—Dpt. Roads, (Prov. Govt.) Quebec City, Que.

Highway Paving Co. Ltd., 6301 Park Ave., Montreal, Que., LB, Approx. $2,000,000, preliminary operations for constr. highway linking Baie Comeau with Seven Islands, some 40 mi. new road. CD 4/6.

BUILDINGS

LOW BIDS AND CONTRACTS

Commonwealth Constr. Co. Ltd., 700 Taylor St., Vancouver, B. C., CA, $869,952, frame, stucco HIGH SCHOOL, NANAIMO, B. C. School Dist. 68, Nanaimo, B. C. Bids July 12, awarded July 25. CD 6/18.

Bentall Constr. Co., Ltd., div. of Dominion Constr. Co. Ltd., 150 West 1 Ave., Vancouver, B. C., CA, $600,000, 1 story paper bag 73,000 sq. ft., brick, concrete FACTORY, DRYDEN, ONT. St. Regis Paper Co. Ltd., 924 Canada Cement Bldg., Montreal, Que. CD 7/26.

C. H. Prudhomme & Sons Ltd., Beamsville, Ont., CA, Approx. $850,000, four 15-suite 2 bedroom APARTMENTS and three 15-suite, 1 bedroom APARTMENTS, Stinson St. and Erie Ave., HAMILTON, ONT. Griesenthwaite Constr. Co., Ltd., 637 Parkdale Ave. N., Hamilton, Ont. L. H. Schwindt & Co., 37 King William St., Hamilton, Ont., Engr.

M. Sullivan & Son Ltd., 234 Elgin St., Arnprior, Ont., CA, Approx. $700,000, 500-man MESS at army camp, Job No. 2-1355, PETAWAWA, ONT. Defense Constr. Ltd., 441 Queen's Quay W., Toronto, Ont. Bids July 4. CD 6/22.

A. Janin & Co. Ltd., 1045 Sherbrooke St. W., Montreal, Que., CA Approx. $700,000, 3 story, 60x250 ft., with two 40x250 ft. wings, rein.-con. brick MAIN BLDG.-to College St. Augustine, ST. AUGUSTIN DE QUEBEC, QUE. Les Rev. F. Capueins, St. Augustin, Que.

CONSTRUCTION REPORTS-Third Section

NEW ENGLAND

HEAVY CONSTRUCTION

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Bayer & Mingolla Constr. Co., Inc., 90 Lincoln St., Worcester, Mass. CA $881,960. hy. constr., Auburn and Worcester, Worcester Co. CD 7/23, under LB.

BUILDINGS

LOW BIDDERS—HEAVY CONSTRUCTION

▲ B. Perini & Sons, Inc., 73 Montavute Ave., Framingham, Mass., CA. Approx. $9,500,000, Under Boston Common GARAGE, Entrance Charles St., BOSTON, MASS. City, City Hall Annex Unit 2, Boston, Mass. Whitman & Howard, 89 Broad St., Boston, Mass., engrs. Mark Linenthal, 16 Lincoln St., Boston,Mass., and Jas. Ford Clapp, Jr., 1 Court St., Boston, Mass., archts. Motor Park, Inc., 1 Court St., Boston, Mass., lessee. 7/19.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

N. J., Camden—COURT HOUSE ANNEX—B.A. 8/16—Bd. Freeholders, Camden Co., Camden, court house annex, $750,000. Edwards & Green, Broadway and Carman St., Camden, N. J., engrs. CD 10/27.

▲ N. J., Trenton—SCHOOL—B.A. 9/5—Hamilton Twp. Bd. Educ., 1960 Greenwood Ave., school, Hamilton Ave., $1,200,000. Herman L. Mack, 2428 Liberty St., Trenton, N. J., archt. CD 10/26.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW JERSEY—State Hy. Dpt., 1036 Parkway Ave., Trenton,
Reid Contg. Co., Inc., Mutton Hollow Rd., Woodbridge, N. J., CA, $1,241,938, Constr. Route 4, Parkway, Sections 21 B and 22, from Dover Rd. to Route 4 north of Cassville Road, Beechwood and S. Toms River, Ocean Co. Bids July 31, awarded 8/2. CD 7/13.

▲ Francis A. Canuso & Son, 173 W. Roosevelt Blvd., Camden, N. J., LB, $5,300,000, sewage treatment plant, CAMDEN, N. J. City, City Hall, Camden, N. J. Bids Aug. 1. CD 6/22.

Kuchar Bros., 7 Franklin Ave., Montvale, N. J., LB $852,498, general contract extensions, imprvs. to Rockaway Valley Sewage Treatment Plant, JERSEY CITY, N. J. Bd. City Comrs., City Hall, Jersey City, N. J. CD 6/27.

† Fred J. Brotherton, 185 Atlantic St., Hackensack, N. J. LB, $734,876, airport facilities, electrical and navigation aids McGuire Air Force Base, Fort Dix, WRIGHTSTOWN, N. J. U. S. Eng. 121 N. Broad St., Phila., Pa. Bids June 28.

▲ † C. C. Davis Constr. Co., New Cumberland, Pa., LB $2,059,267, TEST bldgs. and 4 jet engine test cells, MIDDLETOWN, PA. Dpt. Army, Middletown, Pa. CD 7/12.

▲ City, Street and Sewer Dpt., City Hall, Wilmington, Del., rejected bids July 10, Interceptor sewer No. C along Christiana Creek, LB $9,934,488, WILMINGTON, DEL. CD 7/26, under LB.

▲ MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Baltimore Contractors, Inc., 711 S. Central Ave., Baltimore, Md., LB $275,596. Alternate 1, rehabilitation of East Approach filled causeway, conc. slope paving, Contr. CBB 5-2-87,
John D. Sheets Constr. Co., Halethorpe, Md. LB $69,095., Alternate 3, constr. bridge over Cox Creek, riprap protection of embankment, Contr. CBB 5-2-87, received no bids separately for Alternate 2, reshaping, grading, drainage 0.55 mi. Rte. 50, East Approach beginning East Abutment exten. 2.6 mi. eastwardly.
C. J. Langenfelder & Son, Inc., Box 5106, Baltimore, Md. LB $1,069,563, bid on entire project for East Approach for Chesapeake Bay Bridge, Contr. CBB 5-2-87. Bids July 31. CD 7/23.

▲ † William L. Linker Co., Inc., 2036 Arch St., Phila., Pa., CA, $1,010,048, hangars, bldg. and facilities, New Castle Air Force Base, NEW CASTLE, DEL. U. S. Eng., 121 N. Broad St., Phila., 1, Pa. Bids June 29. CD 7/12, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Gardella & Gray, Inc., 1776 Broadway, New York 19, N. Y. CA, $779,715, James V. Forrestal SCHOOL, BEACON, N. Y. Bd. Educ. Beacon, N. Y. Bids July 29, awarded July 30. CD 6/19, under LB.

▲ Psaty & Fuhrman, Inc., 369 Lexington Ave., New York, N. Y. CA $2,563,000, public HOUSING, 9 and Tilghman Sts. CHESTER, PA. Chester Housing Auth., Chester, Pa. Bids June 25. CD 7/17, under LB.

White Bros., 1416 Olive St., Coatesville, Pa. Separate Contracts, $525,000, RESIDENTIAL DEVELOPMENT, West Chester Rd., COATESVILLE, PA.

U. S. Eng., 121 N. Broad St., Phila., Pa., received no bids July 19, construct, manage and finance, 40 single DWELLING UNITS, provided 12 dwelling units of 3 bedrooms each and 28 dwelling units of 2 bedrooms each. Inv. No. Eng 36-109-51-169, MARIETTA, PA. CD 6/27.

▲ Oxford Constr. Co., 173 W. Roosevelt Blvd., Phila., Pa., CA, $1,250,000, RAILROAD EXPANSION (track-work, rein.-con. span and steel girder bridge), MORRISVILLE, PA. Pennsylvania R.R., 30 and Market Sts., Phila., Pa. CD 1/12/49.

▲ Wark & Co., 1920 Sansom St., Phila., Pa., CA, $2,770,000, machine SHOP, OFFICE bldg., ENGINEER ROOM and PATTERN SHOP, PHILA., PA. Budd Co., 2450 Hunting Park Ave., Phila., Pa. Giffels & Vallet, Inc., Natl. Bank Bldg., Detroit, Mich., engrs. and archts. CD 5-28.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Thompson-Starrett Co., 444 Madison Ave., New York, N. Y. CA $2,874,810. Sewage treatment plant extension, ARLINGTON, VA. Bd. Suprvs., Arlington Co., Arlington, Va. Alexander Potter & Assoc., 50 Church St., New York, N. Y., engrs. CD 7/26, under LB.

▲† Beers Constr. Co., 70 Ellis St. N.E., Atlanta, Ga., LB $2,487,493, vehicle and powered equipment repair SHOP at Warner Robins Air Force Base, MACON, GA. U. S. Eng., P. O. Box 889, Savannah, Ga. Bids Aug. 7. CD 7/30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† T. H. Pearce & Co., Edgewood Circle, Columbus, Ga. LB $4,498,429, base maintenance SHOP at Fort McClellan ANNISTON, ALA. U. S. Eng., P. O. Box 1169, Mobile, Ala. Bids July 30.

Bernard & Byrd, Inc., P. O. Box 8158, New Orleans, La. CA $600,000. 74 HOMES, NEW ORLEANS, LA. M. A. Green, c/o contractor.

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ Ill., Chicago — DEPARTMENT — B.A. 8/16—Chicago Dwellings Assoc., 69 W. Washington St., Zone 3, 17 story, brick, rein.-con. stone apartment, $9,000,000. Holabird & Root & Burgee, 180 N. Wabash St., Chicago, Ill., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ MICHIGAN—State Hy. Dpt., 222 Townsend St., Lansing,
Louis Garavaglia, Center Line, Mich. CA $1,065,497, five-span bridge structure carrying Warren Ave. over Edsel Ford Expressway, UI B 29 of 82-22-10, C3, Wayne Co. Awarded July 26. CD 8/1, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ H. J. Spieker Co., 1418 Elm St., Toledo, O. LB $1,263,000, est. $1,460,550. CHILD STUDY INSTITUTE and JUVENILE COURT BLDG., TOLEDO, O. Lucas Co. Bldg. Co., Court House, Toledo, O. Bids Aug. 1. CD 7/5.

FAR WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † Bressi & Bevanda Constructors & A. Teichert & Son, Inc., P.O. Box 439, North Hollywood, Calif., CA, $6,490,000 extens., strengthening runways, and taxiways Marine Corps Air Station, NOY 23438, Spec. 25805, EL TORO, CALIF. Eleventh Naval Dist., San Diego, Calif. Bids July 28, awarded July 37. CD 7/5, under LB.

▲ † McDonald Bros., 6014 W. Adams Blvd., Los Angeles, Calif., CA, $1,318,118, addnl. bldgs. at Oxnard Air Force Base, ENG 51-105, OXNARD, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 28, awarded July 30. CD 7/3, under LB.

▲ † Pacific Rock & Gravel Co., Box 30, Monrovia, Calif., LB, $1,137,000, exten. runway 8-26, taxiways etc. at Naval Auxiliary Air Station, Brown Field, NOY 27027, Spec. 29072, SAN DIEGO, CALIF. Eleventh Naval Dist., San Diego, Calif. Bids July 19. CD 7/3.

OFFICIAL PROPOSALS

Bids: August 21, 1951

State Hospital Work

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

General work, structural and miscellaneous iron work, plumbing, heating and ventilation, electrical work and elevator for Senile Building at the New Jersey State Hospital at Marlboro, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Tuesday, August 21, 1951 at one (1:00 o'clock, eastern standard time and will be opened and read immediately thereafter. Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director

Bids: August 21, 1951

Conical Plug Valves, Etc.
Contract 412

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, August 21, 1951, for Contract 412, for furnishing, testing and delivering eight 48-inch and two 36-inch cast steel motor-operated conical plug valves, two 42-inch, two 24-inch and one 12-inch cast iron motor-operated conical plug valves, one 14-inch cast iron manually-operated conical plug valve, one 20-inch cast iron motor-operated gate valve, pipe couplings and miscellaneous valves for installation in the intake and outlet chambers of the Neversink tunnel, the Downsville release water chamber and the outlet chamber of the East Delaware tunnel of the Delaware aqueduct, all as set forth in the specifications.

No bid will be received and deposited unless accompanied bya certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of thirty-five thousand dollars ($35,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained in Room 1211, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McCAHEN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

OFFICIAL PROPOSALS

Bids: August 15, 1951

State Highway Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on Wednesday, August 15, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	¢	Name	Miles	Type	Deposit	Estimated Cost of Work
			DISTRICT No. 1				
			G. L. Nickerson, Dist. Engr., 333 Broadway, Albany, N. Y.				
Saratoga	FASS51-18		Middle Grove-Dunhams C.R.21 Proj. No. S-356(1)	4.59	Asp. Conc. Ty.1A,Opt.	$14,000 Plans $15	$260,000
Saratoga	FARC51-57		Stillwater-Schuylerville, Pt. 1, SH5205 Proj. No. F-391(8)	5.34	Asp. Conc. Ty.1A., Opt.	$7,500 Plans $10	$126,000
Warren & Saratoga	FASS51-19		Corinth Bridge & Approaches Co. Rd. Proj. No. S-327(1)	0.34	Bit. Mac. Pen. Method, Ty.1 5 Span Alpha Deck Girder 630' Total Alpha Royalty = $480.50	$35,000 Plans $15	$610,000
			DISTRICT No. 2				
			L. Ketchum, Dist. Engr., 109 No. Genesee Street, Utica, N. Y.				
Fulton	FASS51-17		Gloversville-Vail Mills Proj. No. S-352(1)	2.65	Bit. Treated Graded Gravel	$6,000 Plans $10	$108,000
Montgomery	MT51-1		N. Y. State Thruway-Mohawk Sect. Canalized Mohawk River (Yosts-Fort Plain)	3.03	Hydraulic Excava.	$95,000 Plans $10	$1,841,900
Oneida	FARC51-69		State Bridge-Verona Station, S.H.8432 Proj. No. F-618(2)	2.42	Asp. Conc. Ty. 1A, Opt.	$5,000 Plans $10	$94,000
Oneida	FAC51-2		Rome West Artery (West Whitesboro St.-Black River Blvd.) Proj. U-635(3)	0.72	Traffic Control System	$2,200 Plans $10	$40,000
			DISTRICT No. 3				
			Wm. Robinson, Dist. Engr., Weigh Lock Bldg., Syracuse, N. Y.				
Onondaga	MT51-3 ST51-5		N. Y. State Thruway-Mohawk Sect. Town Line Road	0.57	9" Cem. Conc. Pavt., 52'-31'&Var.Wide = 0.28 Mi. Asp. Conc. Ty. 1A, Opt. = 0.10Mi. Misc. Work = 0.19 Mi. Hy.Sep.4SP.Alpha Beam, 207'Total 53.5' Alpha Beam Bridge Alpha Royalty = $367.20	$25,000 Plans $15	$461,000
			DISTRICT No. 8				
			J. S Bixby, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Columbia & Dutchess	TSP51-1 RC51-6		Taconic State Pkwy.Sect.7,Pt.3; 8; 9,Pt.1; 9A,Pt.2; 9B,Pt. 1 (Lake Taghkanic-West Taghkanic, Co. Rd. 12) Rock City-Lafayetteville, SH628 West Taghkanic-Ancram, SH9058	14.70	Grading & Structures = 12.35 Miles Asp.Conc.Ty.1A, Opt. = 1.97 Miles 9"Cem.Conc.Pavt. 48' Var.Wide = 0.38 Mi. Hy.Sep.Conc.Rig.Frame, 50'-7"Sp. Br.3Sp. Alpha I-Beam, 166.82'-10"&26'r 80'-11" Hy.Sep.2SP.Conc.Rig. Frame, 44'-6"Ea. Hy.Sep.Conc.Rigid Frame 44'-1-1.2"Sp. Hy.Sep.Conc.Rigid Frame = 44 -1-1./2' Sp. Alpha Royalty = $500.	$215,000 Plans $100	$3,986,000
			DISTRICT No. 9				
			F. W. Donovan, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Broome	FARC51-62		Windsor-Deposit, SH5338 Proj. No. F-344(18)	3.5	Asp.Conc.Ty.1A,Opt.	$5,000 Plans $10	$98,000
Delaware	FARC51-58		Hancock-East Branch, Pts.1&2, SH5456, 5246 East Branch-Sullivan Co.L., Pts.2&1, SH5340,5383 Proj. No. F-336(15)	10.45	Asp. Conc. Ty.1A,Opt.	$25,000 Plans $10	$419,000
Orange & Sullivan	FARC51-59		Monticello Vill.-Broadway & Jefferson Sts., SH5490 Bloomingburg-Monticello,Pts. 2&1, SH5457, 5457A, 5510, 5510A Middletown-Bloomingburg, SH5210 Proj. No. F-495(5); F-496(6)	16.79	Asp.Conc.Ty.1A, Opt.	$38,000 Plans $10	$688,000
Sullivan	FARC51-63		Liberty-Co. Line, Pt.1,SH5223 Proj. No. F-336(16)	3.33	Asp.Conc.Ty.1A, Opt.	$5,000 Plans $10	$88,000
			DISTRICT No. 10				
			J. J. Darcy, Dist. Engr., Montauk Highway at Little E. Neck Road, Babylon, L. I., N. Y.				
Bronx	FAMDE51-2		Maj. Deegan Expy.Cont. #3 Proj. No. U-1902(1)	0.75	Viad. Superstr.	$190,000 Plans $50	$3,775,000
Nassau	PSC5466-14337		Elim. of Grade Crossing of Terrace Place & Central Av., Valley Stream with the Long Island RR	1.48	8"Cem.Conc.Pavt. 44'&Var.Wide = 0.14 Mi. Elev. of LI RR Tracks = 1.34 Mi. RR Sep. 65' Pl. Girder RR Sep. 66'-6 1/2" Pl. Girder	$100,000 Plans $25	$1,750,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds.

Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY,
SUPT. OF PUBLIC WORKS

Bids: August 27, 1951

Electric Feeders and Switch House

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
CONTRACT NA-130.001

Sealed proposals for the construction and installation of electrical feeders and switch house at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:30 A.M. Monday, August 27, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, Aug. 9, 1951

Bids: August 16, 1951

Re-advertisement Airport Runways, Etc.

THE PORT OF NEW YORK AUTHORITY
SEAL COATING AND PAVING OF RUNWAYS, APRON, TAXIWAYS AND ROADWAYS, NEW YORK INTERNATIONAL AIRPORT
JAMAICA, N. Y.
CONTRACT O & M 131

Sealed proposals for Seal Coating and Paving of Runways, Apron, Taxiways and Roadways at New York International Airport, Jamaica, N. Y. will be received at the office of the Director of Purchase. The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 A.M., Thursday, August 16, 1951, at which time and place proposals will be publicly opened and read.

Contract documents may be seen at the office of the Director of Purchase and copies will be furnished upon deposit of $10 per set. Deposit must be delivered to the Treasury Dept., Room 1001, where a receipt, in duplicate, will be issued. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of the proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3503) will be received by Bureau of Reclamation, Loveland, Colorado, until September 5, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of Rattlesnake Dam, Estes Park-Foothills Power Aqueduct, Colorado-Big Thompson Project, Colorado. The work is situated approximately 11 miles west of Loveland, Colorado. Principal items are approximately: 320,000 cu. yds., excavation; 400,000 cu. yds., earth and rock fill; 3,700 cu. yds., concrete; and other work. Time allowed for completion will be 400 days. For particulars, address Bureau of Reclamation, Loveland, Colorado; or Building 1-A, Denver Federal Center, Denver, Colo.

SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but SEARCHLIGHT SECTION assumes no responsibility for errors or omissions.

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OFFICIAL PROPOSALS

Bids: August 15, 1951 and August 16, 1951

Highway Construction

Sealed Bids will be received at the Department of Highways, Room 400, Central Highway Office Building, 1221 East Broad Street, Richmond, Virginia, until 10 A.M., Wednesday, August 15, 1951 and Thursday, August 16, 1951, for the following:

BIDS TO BE RECEIVED WEDNESDAY, AUGUST 15, 1951

Route	Project	County	Description
613	1307-09-12	Augusta	5.92 Mi. 16' x 6" & 4" Stab. Base, Bit. S. T. Int. Rt. 11 (Near Greenville)—Augusta-Rockbridge Co. Line
682	1309-04	Bedford	3.47 Mi. 14' x 6" Stab. Base, Bit. S. T. 0.02 Mi. W. Int. Rt. 43 (Kelso Mills)—Int. Rt. 680 (Penick Mill)
616; 612; 644	1312-03-04	Brunswick	8.14 Mi. 16' & 14' x 6" Stab. Base, Bit. S. T. 0.01 Mi. E. of Int. Rt. 629 (Near Ordsburg)—0.11 Mi. S. of Int. Rt. 647 (N. of Charlie Hope)
601; 655	1314-01-02	Buckingham	7.06 Mi. 16' x 6" Soil Cem., Bit. S. T. 0.05 Mi. W. Int. Rt. 602 (Glenmore)—Int. Rt. 604 (Manteo)
600	1315-08-06	Campbell	0.37 Mi. 16' x 6" Stab. Base, Bit. S. T. 0.30 Mi. E. Int. Rt. 40—0.67 Mi. E. Int. Rt. 40
615	1322-01	Craig	2.58 Mi. 14' x 6" Stab. Base Int. Rt. 611 (N. of Barbours Cr. P. O.)—Botetourt Co. Line
600	1324-01-02	Cumberland	2.03 Mi. 14' x 6" & 3" Stab. Base, Bit. S. T. & Bridge 0.14 Mi. W. of Int. 620 (Stony Point Mills)—Int. Rt. 654
607; 670	1325-03	Dickenson	2.92 Mi. 16' Modified Pen. Treat. 0.03 Mi. W. Int. Rt. 80 (Near Birchleaf)—0.03 Mi. W. Int. Rt. 600
609; 670; 629	1326-07; 1374-06 Group 22	Dinwiddie & Prince George	6.50 Mi. 14' x 6" Stab. Base, Bit. S. T. Int. Rt. 626 (N. of Wharfs Store)—Int. Rt. 703 & Int. Rt. 301 (S. of Rivers School)—Int. Rt. 608
622; 624	1338-03-05	Grayson	6.22 Mi. Modified Pen. Treat. Int. Rt. 622 (Near Delhart)—Int. Rt. 624
615	1358-07	Mecklenburg	3.25 Mi. 16' x 6" Soil Cem., Bit. S. T. 0.02 Mi. W. Int. Rt. 1 (Beechwood)—Int. Rt. 669
668	1371-01-02	Pittsylvania	1.37 Mi. 20' x 6" Stab. Bit. S. T. & Bridge E. End Staunton River Bridge—1.40 Miles East
660	1377-03-04	Pulaski	3.09 Mi. 16' x 6" Stab. Base, Bit. S. T. Int. Rt. 611—3.09 Mi. S. of Int. Rt. 611
644	1392-01	Tazewell	2.99 Mi. 18' x 6" Stab. Base, Bit. S. T. 0.70 Mi. E. of W. Va. State Line—0.43 Mi. E. of E. Int. Rt. 655
605	1395-03	Washington	4.91 Mi. 14' x 4" Stab. Base, Mod. Pen. Treat. 0.01 Mi. W. Int. Rt. 731 (Widner Valley School)—0.02 Mi. N. Int. Rt. 604
689	1395-04	Washington	6.71 Mi. 14' Mod. Pen. Treat. Int. Rt. 687 (Near Brumley Gap)—Int. Rt. 80 (Hayters Gap)
652	1397-06	Wise	4.40 Mi. 16' & Var. 4" Stab. Base, Mod. Pen. Treat. Int. Rt. 72 (Near Tom's Creek)—Dickenson Co. Line

BIDS TO BE RECEIVED THURSDAY, AUGUST 16, 1951

Route	Project	County	Description
13	1601-08-09	Accomack	2.62 Mi. 2-24' x 8" Reinf. Conc. Pave. 1.16 Mi. S. Nelsonia—1.46 Mi. N. Nelsonia
13	1664-08	Norfolk	0.66 Mi. 2-18' x 6" Stab. Base, Bit. S. T. 5.28 Mi. E. Int. 58 (Near Bowers Hill)—5.94 Mi. E. Int. Rt. 58 (Broadmoor)
11; 58; 19	1695-03-04	Washington	N. & W. Underpass & Approaches 3.15 Mi. E. of E. C. L. Bristol—2.87 Mi. E. of E. C. L. Bristol
15	1819-02-03; 1858-07	Charlotte & Mecklenburg	14.94 Mi. Conditioning & Bit. S. T. Int. Rts. 360 & 47—1.22 Mi. S. Int. Rt. 49 (N. of Clarksville)
460	1935-02	Giles	0.18 Mi. 13' x 13" Stab. Base, Bit. S. T., Curb & Gutter & Incidentals 0.17 Mi. S. Int. Rt. 219—Int. Rt. 219
17	2009-04-05	York	2.17 Mi. 22' x 8" Reinf. Conc. Pave. & Bridge 6.12 Mi. N. Int. Rt. 613 (Near Tabbs)—2.30 Mi. N. Int. 613
360	2320-06	Chesterfield	2.29 Mi. Divided Highway 2-24'x 8" Stab.Base, Bit.Top 3.03 Mi. W. of W. C. L. Richmond—0.74 Mi. W. of W. C. L. Richmond
31	2847-02	City of Williamsburg	0.24 Mi. Conc. Curb, Gutter & Sidewalk Space Int. Rts. 60 & 31 in Williamsburg—N. C. L. Williamsburg
12	3221-06-07	Clarke	2.74 Mi. 22' x 8" & 0.43 Mi. 36' x 8" W. B. Mac. Bit. Pen. Top 2.60 Mi. N. of N. C. L. Boyce—0.48 Mi. N. of S. C. L. Berryville
360	2320-11	Chesterfield	15.33 Mi. Bit. Conc. Pavement 0.18 Mi. E. Amelia County Line—1.82 Mi. E. of Nuttree Creek
14; 30	3749-01; 3450-01 & 3757-02	Mathews; King William & King & Queen	4.85 Mi. Conditioning & Stab. Base, & Ditches 0.50 Mi. E. Stevensville—1.15 Mi. from Mathews C. H.—Spot Work
190	4075-01-02	Princess Anne	183' Swing Span & 8-32' Steel Beam Spans (445') Bridge over North Landing River & 0.32 Mi. 20' x 8" Stab. Base Approaches
46	6812-05	Brunswick	1.25' Conc. Arch Bridge over Waqua Creek
40	2755-02-03	Lunenburg	1.20 Miles from Danieltown Overpass Virginian RR at Kenbridge & Approaches 0.20 Mi. W. Int. 6th Avenue—0.15 Mi. W. Int. 6th Avenue
522	2634-05-06	Frederick	215' Bridge over Back Creek & Approaches 8.87 Mi. N. of N. C. L. Winchester—9.33 Mi. N. of N. C. L. Winchester
6	3143-03-04	Henrico & Goochland	Widening Bridges over Deep Run & Tuckahoe Creek 4.20 Mi. W. of Richmond—5.20 Mi. W. of Richmond

The State will also receive bids 10 A.M., Thursday, August 16, 1951 on two (2) Bituminous Plant Mix Schedules. These schedules are located in the Bristol District with a combined total of materials as follows:

OFFICIAL PROPOSALS

2,541 Tons Bituminous Plant Mixed Material
165 Tons AP-3 Asphalt Cement
1,500 Gallons Group 2 Bituminous Material (Prime)

Plans and specifications are on file at the Richmond and Local District Office. Proposal guaranty shall be certified check or bid bond in the amount shown in schedule on back of proposal form. Bid Bond to be on form furnished by the Virginia Department of Highways. The Commission reserves the right to reject any or all proposals submitted in response to this advertisement, and to waive technicalities as it may deem best for the interest of the State.

Bids: August 29, 1951

SEWAGE FORCE MAIN AND SEWAGE TREATMENT PLANT

SEALED BIDS will be received by the DOVER SEWERAGE AUTHORITY at the Township Committee Chambers, New Town Hall, 33 Washington Street, Toms River, New Jersey, at 8:00 o'clock, P.M., on the twenty ninth day of August, 1951, for the construction, under two contracts, of a SEWAGE FORCE MAIN and a SEWAGE TREATMENT PLANT, at which time and place they will be publicly opened, read and considered. Bids may be submitted on either or both of the following divisions of the work:

CONTRACT NO. 1—SEWAGE FORCE MAIN comprising approximately 2500 feet of 12 inch main, valve and meter housing, connection to present pumping station and Imhoff tank, valves and appurtenances.

CONTRACT NO. 2—SEWAGE TREATMENT PLANT having a capacity of 350,000 g.p.d. and comprising 2 Imhoff tanks, dosage tank, intermittent sand filters, sterilization and contact chamber, influent and effluent lines, machinery and equipment, housings and appurtenances.

Full information may be had at the office of the Dover Sewerage Authority Toms River, New Jersey, and at the office of Earl E. Sousley, Engineer, Hyers Streets, Toms River, New Jersey. Plans, specifications, proposals and other contract documents may be obtained upon the payment of $10.00 for each set for either contract, which payment will be refunded upon the submission of a sealed bid and the return of the plans and specifications in good condition. The right is reserved to reject any and all bids.

DOVER SEWERAGE AUTHORITY
Joseph A. Citta, Chairman
Robert D. Conti, Secretary

Bids: August 21, 1951

Bridge and Road Constructions

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 4 PARKWAY,
SECTIONS 9B & 9C(1)

Construction of Route 4 Parkway, Sections 9B & 9C(1) from Galloping Hill Road to Route 29; Seven Bridges & Incidental Grading, Township of Union, Union County, Federal Project No. AE-U-188(24).

Roadway Items

Estimated: 84,727 cu. yds. Roadway Excavation-Earth
2,024 cu. yds. Channel Excavation
5,141 sq. yds. Waterbound Base & Intermediate Courses
427 tons Bituminous Concrete Pavement
848 sq. yds. Conc. Pavement Surface, Plain 8" thick
2,141 lin. ft. 12"-18" R. C. Culvert Pipe
269 lin. ft. 6"-18" C. M. Culvert Pipe
42 units Inlets & Manholes
2,044 lin. ft. White Concrete Curbs

Bridge Items

10,860 cu. yds. Foundation Excavation
1,240 sq. ft. Random Ashlar Masonry
23.5 cu. yds. Cap Stone
24,700 lin. ft. Treated Timber Piles
15,207 cu. yds. Concrete in Structures
1,739,200 lbs. Structural Steel
1,047,700 lbs. Reinforcing Steel Structures
17,785 sq. ft. Waterproofing

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Ave., Trenton, N. J., on Tuesday, August 21, 1951, at ten o'clock (10:00 A.M.-EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME) and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant & equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 646 and 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 268 North Broad St., Elizabeth, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set A of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Ave., Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-206 for furnishing labor and materials and performing all work for the construction of Bairoil Substation, Kendrick Project, Wyoming, will be mailed to P. O. Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opening at 10 a.m., Mountain Standard Time, August 21, 1951, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming. Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $0.75 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

Bids: August 24, 1951

Water Tank and Tower

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

Construction and erection of one four hundred thousand (400,000) gallon double elipsoidal steel water tank and tower, including foundations and accessories, at the Fourth Mental Hospital, Ancora, Winslow township, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Friday, August 24, 1951 at one (1:00) o'clock, E.S.T. and will be opened and read immediately thereafter.

Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3510) will be received by Bureau of Reclamation, El Paso, Texas, until August 30, 1951, and then publicly opened for furnishing labor and materials and performing all work for the channelization of the Rio Grande River from San Marcial to the narrows of Elephant Butte Reservoir, Elephant Butte Division, Middle Rio Grande Project, New Mexico. The work is situated approximately 28 to 50 miles south of Socorro, New Mexico. Principal items are approximately: 2,600 acres, clearing; 3,500,000 cu. yds., excavation; 68 M.b.m., timber bridges; 2,000 lin. ft., timber piles; and other work. Time allowed for completion will be 465 days. For particulars, address Bureau of Reclamation, El Paso, Texas; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3500) will be received by Bureau of Reclamation, Goleta, California, until August 30, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of Sheffield Tunnel, South Coast conduit Carpenteria section, Cachuma Project, California. The work is situated near Santa Barbara, California. Principal items are approximately: 11,900 cubic yards excavation; 2,600 cubic yards concrete, furnishing, laying, and testing 6,000 linear feet of 30-inch diameter reinforced concrete pipe; and other work. Time allowed for completion will be 500 days. For particulars, address Bureau of Reclamation, Goleta, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3506) will be received by the Bureau of Reclamation, Denver, Colorado, until September 13, 1951, and then publicly opened for furnishing two 25,000-hp, 600-rpm, vertical-shaft hydraulic turbines for Eklutna Project, Alaska. Delivery is desired within 630 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3501) will be received by Bureau of Reclamation, Casper, Wyoming, until August 28, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of the Seminoe-Bairoil 34.5-kv transmission line, Kendrick Project, Wyoming. The work is situated near Seminoe and Bairoil, Wyoming. The line will be a 3-phase, single-circuit, single-wood-pole transmission line approximately 36 miles long. Contractor is to furnish all materials except poles, crossarms, and conductor. Desired time for completion is 120 days. For particulars, address Bureau of Reclamation, Casper, Wyoming; or Building 1-A, Denver Federal Center, Denver, Colorado.

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
EMPLOYMENT WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.25 a line an insertion.

INFORMATION.
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $14.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by August 13th at the New York City Office, 330 W. 42 St., N. Y. 18, will appear in August 23rd issue subject to space available

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Blast Furnaces and Open Hearth Plants. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.
Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-1512, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WANTED
TWO STRUCTURAL DETAILERS - CHECKERS

Permanent jobs for good men with experience in all types of bridge and building work. Apply by letter giving resume of experience and salary desired.

PAXTON & VIERLING IRON WORKS
P. O. Box 1085 Omaha, Nebraska

SANITARY ENGINEER

Manufacturer of Sewage and Water Treatment Equipment requires the services of an experienced engineer with practical and educational background. Mid-western location. Please submit full particulars in reply which will be held in confidence. Our employees know of this advertisement.

P-1440, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

PARTY CHIEFS—SURVEYORS

Excellent opportunities for immediate permanent employment with a progressive organization, having a long range program of important engineering work. Experience essential in field surveys for highway location and design, water and sewage facilities, airports, dams, etc.

Desirable working conditions at salary commensurate with ability. Write for application blank. All replies will be held confidential and will be promptly acknowledged.

CAPITOL ENGINEERING CORPORATION
DILLSBURG, YORK COUNTY PENNSYLVANIA

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED—GRADUATED civil or structural engineer as field representative, Ohio, by long established engineering, promotional and educational organization. Give resume of education, engineering experience and salary requirements. Prefer age 25-45. P-1418, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsmen and Checkers. All types of Structures. Vacation, group insurance, good working conditions. Only top quality men. Send complete written information. Bristol Steel & Iron Works, Inc., Bristol, Virginia-Tennessee.

PROFESSOR OF MECHANICAL Engineering wanted, M.E. with Master's degree plus power plant experience to be head of Mechanical Engineering Department. Salary $5700 on 9 months' basis. Send applications to Professor E. L. Lium, University of North Dakota, Grand Forks, North Dakota.

ESTIMATOR: TAKE-OFF and price quantities on New York and Pennsylvania School and Housing work. New York City office with two other estimators. State salary and experience. P-1572, Engineering News-Record.

ELECTRICAL ENGINEER—Position open for man with experience in take-off, estimating and supervision of power plant construction. Excellent opportunity for four year project from start to finish of large hydro plant on Missouri River. Immediate employment desired. Send experience record, education and references with application. Salary commensurate with qualifications. Donovan Construction Co., 1725 Carroll Avenue, St. Paul 4, Minn.

BRIDGE ENGINEERS. Positions for draftsmen, designers, project managers, and contact men. Good pay for qualified men in accordance with experience. Opportunities for advancement. Pleasant working conditions. Interesting projects. Apply in person, or write fully stating education and experience. D. B. Steinman, Consulting Engineer, 117 Liberty St., New York 6.

SELLING OPPORTUNITY OFFERED

WANTED: CENTRAL New York Distributor desires sales manager to handle complete line of cranes and shovels. Machines of 3/8 cu. yd.—5 cu. yd. Are leaders and enjoy good acceptance in the territory. Will consider only men with top production record and good recommendations. Letter of reply must state full particulars and income expected. SW-1555, Engineering News-Record.

(Continued on page 88)

STRUCTURAL-ARCHITECTURAL ENGINEER
MECHANICAL ENGINEER
ELECTRICAL ENGINEER

Applications solicited from men with training or experience in above, in industrial and process engineering construction.
Excellent opportunity with growing firm for executive advancement in Atlanta Home Office or newly established branches. Send typed resume to:

P-1539, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

CONCRETE DESIGNERS

Minimum 5 yrs. experience in foundation & reinforced concrete design. Large long-range expansion program. Good salary, liberal benefits program. Location of work Detroit, Mich. Qualified applicants write.

DETROIT EDISON CO.
2000 Second Ave., Detroit 26, Mich.

CONSTRUCTION SUPERINTENDENT

Permanent position open for graduate engineer experienced in installation of machinery and equipment large industrial plant. Prefer experience in cement plant construction.

P-1536, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS

Experienced or trained in airport paving and drainage, mechanical, electrical, architectural, water and sewer plants. Advancement for right men in Atlanta or Houston Offices. Send typed resume to

P-1542, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

TOPOGRAPHERS WANTED

PLANE TABLE EXPERIENCE

Give age, experience, education and salary expected.

BOSWELL ENGINEERING CO.
Ridgefield Park, N. J.

WANTED

ENGINEERS

. . . to train as . . .

Industrial Consultants in Fire Protection Engineering

full pay to start—complete training field engineering with top U. S. and Canadian industry—usual pension and other benefits. Permanent.

Write complete qualifications to

P-9609, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

ENGINEERS & INSPECTORS

Experienced in batch plant or site control of concrete, compaction control of earth fill and plant inspection of asphalt paving. Projects in Midwest, South & East. Write to

TOLEDO TESTING LABORATORY
Toledo, Ohio

GOOD POSITIONS FOR
ENGINEERS, DETAILERS AND DRAFTSMEN
On Sewage, Water, Highway and Traffic Projects
Apply to
GANNETT FLEMING CORDDRY & CARPENTER, INC.
Harrisburg, Pa.

REINFORCED CONCRETE

Unusual opportunity for competent, experienced Superintendent. Must be aggressive and cost-conscious. Write promptly detailed account of experience, with special emphasis on reinforced concrete frame structures. Salary open.

P-1291, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DESIGNERS, DRAFTSMEN, ELECTRICAL - MECHANICAL - STRUCTURAL. JOB LOCATED IN MIDDLE WEST. EXCELLENT WORKING CONDITIONS. GOOD SALARY. OLD ESTABLISHED COMPANY.

P-9872, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

REGISTERED CIVIL ENGINEER

The majority of the work on highway and sewer design. $5890 to $6810 per year. Submit a complete brochure of your experience and training. Apply to the Civil Service Office, City of Dearborn, Michigan.

WANTED PAPER MILL ENGINEER

Established paper mill in central Wisconsin has opening on Engineering Staff for trained Civil Engineer. Experience desirable, but recent graduate will be considered.

Furnish references and details of experience and training. Excellent opportunity in a progressive organization.

P-1483, Engineering News-Record
330 W. 42nd St., N. Y. 18, N. Y.

DESIGNERS AND DRAFTSMEN

Mechanical, Structural with concrete structural or gas piping experience. Permanent employment, good working conditions, vacation, hospitalization, retirement plan, other benefits. Will pay transportation to location. Address reply to

TEXAS GAS TRANSMISSION CORP.
Box 577, Owensboro, Kentucky

DESIGNERS — ENGINEERS

The Arthur G. McKee and Company are in need of men with experience as:

STRUCTURAL DESIGNERS
CONCRETE DESIGNERS
ELECTRICAL DESIGNERS
PIPING DESIGNERS
CHECKERS

Men should have experience in Blast Furnace, Steel Mill, Oil Refinery or other heavy structural design.

We pay among the highest rates in the industry. In addition our employees share annually in company profits.

Positions are available in our main offices at Cleveland, Ohio; or our branch offices at Union, New Jersey, and Tulsa, Oklahoma.

Excellent working conditions in modern, well-lighted offices.

Our continuous expansion and growth offers many fine future opportunities for men who desire to develop and advance.

Write

Arthur G. McKee & Co.

2300 Chester Avenue — Cleveland 1, Ohio

ENGINEERS

ELECTRICAL - MECHANICAL - STRUCTURAL

Openings in Ohio and New York offices offering long term employment with good salary for qualified Group Leaders, Designers and Draftsmen experienced in one or more of the following phases of industrial plant design:

Electrical	Power, lighting layouts and electrical controls.
Mechanical	Plant layout, process piping, conveyors, heating and ventilation, boiler houses, process equipment layout, refrigeration, plumbing, tanks and vessels, packaging equipment, special machinery and equipment.
Structural	Structural steel and reinforced concrete.

Please submit complete resume stating experience, education, salary required and availability date.

THE H. K. FERGUSON COMPANY
Engineers and Builders

The Ferguson Bldg. 1783 E. 11th St.
Cleveland 14, Ohio

19 Rector Street
New York 6, N. Y.

DESIGNERS

HIGHWAY and STRUCTURAL

Excellent opportunities for immediate permanent employment with a progressive organization, having a large range program of important engineering work. Experience preferred, but not essential, in engineering design for highways, bridges, airports, industrial, special-purpose buildings, water and sewage treatment plants. Engineers needed also with experience in writing specifications and reports.

Desirable working conditions at salary commensurate with ability. Write for application blank. All replies will be held confidential and *will be promptly acknowledged.*

CAPITOL ENGINEERING CORPORATION
DILLSBURG, YORK COUNTY — **PENNSYLVANIA**

ELECTRICAL ENGINEER

Graduate Electrical Engineer from upper half of class from recognized college. Age between 22-26. No previous experience required. Permanent with chance of advancement. Give full qualifications first letter, also salary expected.

J. T. BAKER CHEMICAL CO.
Phillipsburg, New Jersey

CONSTRUCTION SUPERINTENDENT

OLD ESTABLISHED DETROIT, MICHIGAN GENERAL CONTRACTING COMPANY HAS PERMANENT POSITION OPEN FOR AN EXPERIENCED JOB SUPERINTENDENT SPECIALIZING IN LARGE INSTITUTIONAL AND INDUSTRIAL WORK. GIVE FULL PARTICULARS AND QUALIFICATIONS.

P-1571, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

(Continued from page 86)

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven.

POSITIONS WANTED

GENERAL FOREMAN. Age 40, desires position in Latin America. Proven experience in all types of welded steel construction. Previous Latin American experience. PW-1336, Engineering News-Record.

DIVER-FRANK HEFLING, formerly Chf. S.F. US or foreign work. Passport. Capable deep water. 17 years const. salvage, surveys, special jobs outfitted. Record underwater torch. Modern phones, safety power compressor, single unit lifeline. Experience designer air lift, dredging, excavating, dewatering. Miami, Fla., 268 S.W. 8th St., Phone 3-8089.

CIVIL ENGINEER, P.E., 20 years engineering and architectural experience all types of heavy construction, housing, commercial structures, private and Government work. Design, bidding, contract negotiations, specifications, estimating, field and office supervision. Some foreign experience, languages. Wishes domestic or foreign assignment with owner, architect, builder or contractor where business experience and mature judgment are required. PW-1355, Engineering News-Record.

TECHNICAL ADMINISTRATOR, 33. College equivalent in civil engineering. 15 years experience in surveys, mapping, highways, sewerage, drainage, water distribution and land planning including project planning, designs, investigations, reports, evaluations, quantity and cost estimates and engineering and construction contracts and specification. Desires association with established consulting engineering firm. Available in approximately 60 days. PW-1529, Engineering News-Record.

ELECTRICAL SUPT. A-1—Available soon, 30 years experience large and small industrial and commercial projects. Field Engineering-Purchasing-Electronic Controls. PW-1552, Engineering News-Record.

Construction Manager Available

Experienced general construction man seeks General Contractor or Company requiring services of a construction manager for large projects or joint ventures; thoroughly familiar with administration of government contracts. Foreign or domestic. Highest references.

PW-1573, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
Courses of instruction by mail. Forty-first year
Information sent without obligation. Write today.

WILSON *Engineering Corp.*
College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

POSITIONS WANTED

SPECIFICATION WRITER with broad experience in preparation of contract documents; 28 years' engineering and construction, both engineering and law degrees. PW-1451, Engineering News-Record.

PROJECT MANAGER, Project Engineer, Heavy Construction, Airfields, Tunnels, heavy foundations. Underpinning all types piles and sheeting rock and earth excavation. PW-1511, Engineering News-Record.

ASST PROJECT MANAGER-Office Manager-Controller. Prime, Sub, and Joint-Venture accounting. C.P. FF., unit price and lump sum contracts. Handled 20 million dollar yearly volume. College grad. Will relocate. PW-1550, Engineering News-Record.

REGISTERED C.E. Over 20 years experience in office and field. Design and construction of earthwork, concrete-work, roads, bridges, sewers, etc. Desires office position. Midwest or Southwest preferred. PW-1532, Engineering News-Record.

CONSTRUCTION EXECUTIVE. 24 years experience in general contracting, architectural-engineering and architecture. Top positions in full charge of building design and construction. Leading firms. Large projects. Experienced, Government Contracts. Graduate Architectural-Engineer. Licensed. PW-1568, Engineering News-Record.

BUSINESS OPPORTUNITIES

Dock Building Business for Sale.
Malcolm Davis, Nokomis, Florida.

Large Mechanical Corporation
with quarter million in equipment and tools for Plumbing, Heating, Ventilating and Sheet Metal work; with excellent Estimating, Supervising, and Purchasing Departments; good material connection; wide experience in the field of Power Plants, Water Treatment Plants, Government Housing, Hospitals, and Office Buildings, desires to make connection with reliable large General Building and Engineering Contractor. Object—Expansion. Location no object. Reply BO-1474, Engineering News-Record.

SPECIAL SERVICE

Structural designing
detailing wanted by engineer. Licensed engineer; low costs. SS-1580, Engineering News-Record.

FOR SALE

(Additional For Sale Ads on Pages 89-93)

Inspect the following Equipment at our plant, Washington, Pa., R. D., McClain's Mine, Meadowlands, Pa.:

3—Super C Tournapulls
1—D-8 Caterpillar & Angle Dozer
1—D-8 Caterpillar Tractor
1—D-7 Caterpillar & Angle Dozer
1—D-7 Caterpillar Tractor
1—L.S. LeTourneau Carryall Scraper
1—L.P. LeTourneau Carryall Scraper
1—Parsons Ditching Machine
1—2" Centrifugal Pump
1—255A Syd. P&H. Combination Shovel & Clam
3—10 Ton Rollers
1—5 Ton Roller
1—Trench Roller
Salamanders, Tarpaulins, Water Hose, Air Tools and numerous other articles.

J. A. IRWIN ESTATE
200 Court Office Building, Washington 1, Pa.
PHONE: Washington 3463
Evening Waynesburg 574-W

SURVEYING INSTRUMENTS

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INSTRUMENT REPAIR BY CRAFTSMEN

Our craftsmen have a completely equipped department fully able to accommodate the repair of all makes of transits, levels and measuring tape. Work includes thorough overhaul, cleaning, oiling and adjustment.

Precision work guaranteed.

DAVID WHITE COMPANY
317 W. Court St., Milwaukee 12, Wis.

INSTRUMENTS FOR RENT

We rent transits and levels on a monthly or yearly basis. Reasonable rates. All instruments are fully guaranteed in first class working order.

DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12, Wis.

WANTED

WANTED IMMEDIATELY

One (1) Gantry Crane—30 tons capacity, approximately 40 ft. span, 25 ft. lift, preferably 220 or 440 volt AC, 60 cycle drives.

DENVER & RIO GRANDE WESTERN RAILROAD
1531 Stout St.—Denver, Colorado
Office of the Chief Engineer

Poor Aladdin . . .

The best service at Aladdin's command was rubbing a lamp and WISHING for what he wanted. YOU have "Searchlight" to help you find what you want!

Can "Searchlight" Serve You?

SHOVELS

SUBJECT TO PRIOR DISPOSITION

Manitowoc model 2000B 1 ¼ c.y. Combination standard shovel and dragline with Caterpillar D-13000 diesel. Good condition.
$22,000 FOB Johnson, Pa.

Lima Type 1201 Standard Shovel, Long Crawlers, Wide Tread, 32' 6" Shovel Boom, 22' Dipper Handle, 1 c.y. Dipper, Cummins Type L Diesel, in good operating condition. Serial 5285.
$58,000 FOB Conshocken, Pa.

1—93M Marion 2½ yd. Combination Shovel and Dragline with Caterpillar D-17000 Diesel Engine, 1500 Watt Light Plant, 2½ c. yd. Dipper, Dragline Boom with Fairlead, 14000 lb. Extra Counterweight. Machine is in good condition. Serial 8782.
$37,000 FOB Johnstown, Pa.

111M Marion, Combination Shovel, Dragline, 4 yd. Dipper, 80' Dragline Boom, Fairleads, Two General Motor diesels. Good condition. New 1947. Serial 8608.
$70,000 FOB Johnstown, Pa.

1—Bucyrus-Erie 54B Hi-Lift Shovel Front with 45' Boom, 32' Tubular Steel Handle, and two c.y. Dipper.
$10,000 FOB Johnstown, Pa.

111 M Marion Standard Shovel Attachment, 30 ft. boom, 23'8" Stick, 3½ yd. Manganese Bucket. This item is brand new. Located in Johnstown, Pa. Immediate delivery at considerable less than replacement cost.

DRAGLINE BUCKETS
from 1½ to 5 yds.

WILL CONSIDER RENTAL

S. J. GROVES AND SONS COMPANY

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WHitehall 3-1055

Available Immediately-Subject to Prior Sale

AIR COMPRESSOR
Jaeger 75
Worthington 180
LeRoi 210
Ingersoll-Rand 315

BUCKETS
Haiss ½ yd. clam
BK ⅛ clam
Heincke ¾ yd. clam
Keisler 1 yd. clam
Wellman ½ yd. drag
Hendrix ⅓ drag
Page ¾ yd. RC drag
Hendrix 2½ yds. HS drag
Concrete buckets ½-¾-1 yd.

CRANES
P & H 600
Insley K-12
Lima 34
P & H 150
Bucyrus-Erie 1035
Bucyrus-Erie 10B
Insley K-12 shovel front
Insley K-12 hoe attachment
P & H 150 shovel front
P & H 150 hoe attachment
Lima 602 shovel attachment
35' boom for Koehring 378
Lima 34 hoe attachment

GRADERS
Galion 104
Galion 118
Caterpillar 10
Galion 1HC
A.C. "W" Patrol

LOADERS
Burch car unloader
Austin-Western
Haiss 73 W
General crawler
Scoopmobile

PAVERS
Adnun black top
Foote 27E

ROLLERS
Galion 10 ton 3 wheel
C. H. & E. 2-3 ton

TRACTORS
A.C. HD7 w/Baker blade
A.C. HD10 w/GW blade
Int. TD-14 w/BE blade

MISCELLANEOUS
Highway Spreader
Rud-o-matic Taglines
Cleaver Brooks Tankcar Heater
10-T Stiff Leg Derrick
125 ft. 24" Conveyor
2-D American 55 H.P.
C. H. & E. Saw Rigs
Cleveland Wagon Drill
G-D Wagon Drill
Pumps all sizes
McKiernan-Terry 53 hammer
Jaeger Truckmixer 2HC

REID HOLCOMB COMPANY, INC.
1815 Kentucky Ave. Phone: Market 4433 INDIANAPOLIS, IND.

FOR SALE
2 late type ft.—CI'T and Davey portable, pneumatic tired compressors, gas powered.
1—⅝ Yd. model 45 Bay City shovel front.
1—1¼-1½ Yd. Northwest shovel front.
1—1½ Yd. Northwest crawler crane, gas powered.
1—1½ Yd. Northwest diesel powered shovel.
1—100 H.P. diesel powered 3 drum American hoist with swinger.
MERTES MACHINERY COMPANY
MILWAUKEE, WISCONSIN

NEW and USED
Construction Equipment

1. New 20-25 ton Low Bed Trailer Tandem (air brakes, spring mounted, Bud wheels). $5200.00
2. Used 20-25 ton Low Bed Trailer (same as above). $3750.00
3. Used KB 10-11 1949 International Tandem Tractor (fully equipped for above trailers). Excellent condition. $5000.00
4. TD-24 Tractor Serial No. 900 and 1000 Nos. — Caterpillar No. 25 P.C.U. — push plate, new roller, sprockets, motors, etc. 100-300 hours since rebuilt. Like new. $13,500.00
5. 170 Bucyrus-Erie scrapers — 1800 x 25 — 20 ply tires 6 months used. Serial No. 69819. Near new. $10,000
6. 304 Koehring dragline Serial No. 7781 — UD-18 Engine, long and wide pads — 50' boom ⅝-(1 yd. Hendrix L. S. bucket (9 months old). Perfect condition. $17,000.00
7. Hyster Heavy duty towing winch Model D8N. Serial No. 12268, used very little. $2700.00

J. D. Armstrong Co., Inc.
Box 307, Ames, Iowa
Phone 2406 Night phone 2319

FOR SALE—*NEW*

CEDAR RAPIDS 60" x 24' portable Drier unit mounted pneumatic tires, rear wheel brakes, cold material elevator powered with BUDA diesel engine with FALK speed reducer.

LITTLE GIANT bucket loader with 17' boom width, 15" x 7" buckets powered with 4 cylinder WISCONSIN engine all mounted on crawler treads.

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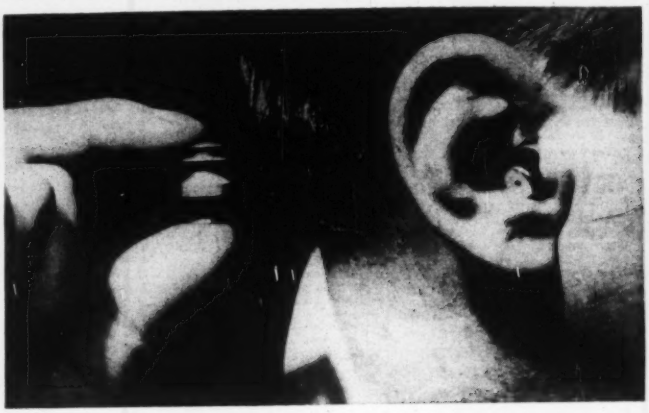

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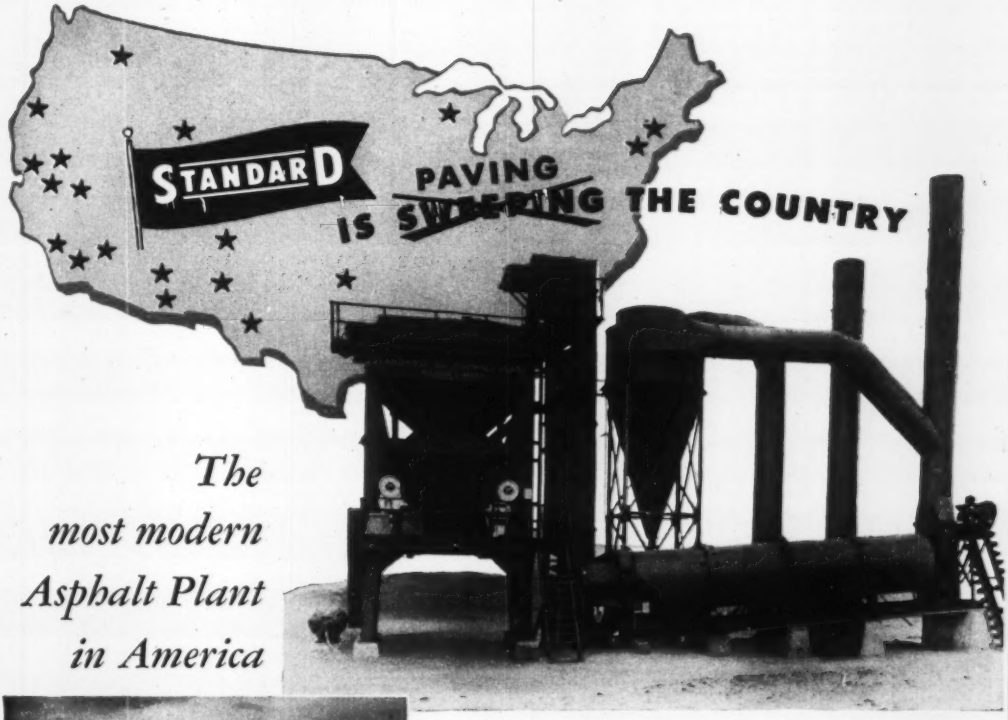
Here's a new gadget whose efficiency and usefulness is highly recommended and endorsed by drillers, riveters, industrial workers and shooting instructors. The Lee Sonic Ear-Valv eliminates the harmful effect of sudden blast-type noises on ear drums; at the same time leaving the ear canal open to permit passage of normal voice level sounds. Following an explosion there is often a vacuum which is more harmful to the ear drum than the blast itself and the valve also eliminates forces from these vacuums. Unlike a hearing aid it has no wires, batteries or other parts. It's definitely not a plug, but a sonic filter. Because the canal is left open to air circulation the valve is not uncomfortable to wear, thus encouraging continual usage. One owner claims that since its principle is similar to that of a human ear, one might say he has four ear drums instead of two. SIGMA ENGINEERING COMPANY, 1491 No. VINE STREET, LOS ANGELES 28, CAL.

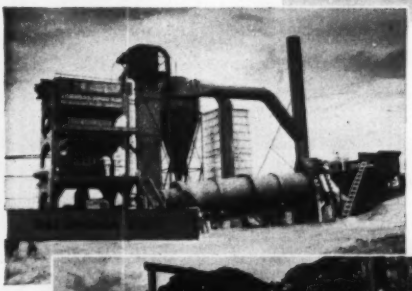
2-way radio runs on battery or 110 volt

Known as the Pack Set Power Supply, this handy gadget makes it equally easy to operate the Motorola FM 2-way radiophone pack unit by making it convertible to semi-fixed or mobile application, preserving the batteries for portable use only. The plug-in power connection and switching facilities permit quick changeover to 110-117 volts as shown above or to a 6-volt D.C. primary power supply such as that found in a pickup, truck or car. Fastening bracket is easily detached. MOTOROLA TECHNICAL INFORMATION CENTER, COMMUNICATIONS DIV., 4545 W. AUGUSTA BOULEVARD, CHICAGO 51, ILLINOIS.

(*Continued on page 99*)



The most modern Asphalt Plant in America



From California to New Jersey the new Standard SM Series Asphalt Plant is being hailed as the acme of modern design—tops for rugged dependability, yet most economical to own and operate.

Only STANDARD offers all these advanced profit-building features

• Roller bearing equipped, twin-shaft mixer with patented sectionalized lining for easier, more economical replacement • Vertical hot elevator to cut friction and vibration • Fully dust sealed construction throughout • New easy motion control levers at operator's station to reduce fatigue factor • Individual electric motor drives • Manual or fully automatic weighing • Pressurized oil heating system • All parts easily accessible • Clean, straight line design for elimination of vibration • Completely synchronized flow • Unit built for easy erection or dismantling.

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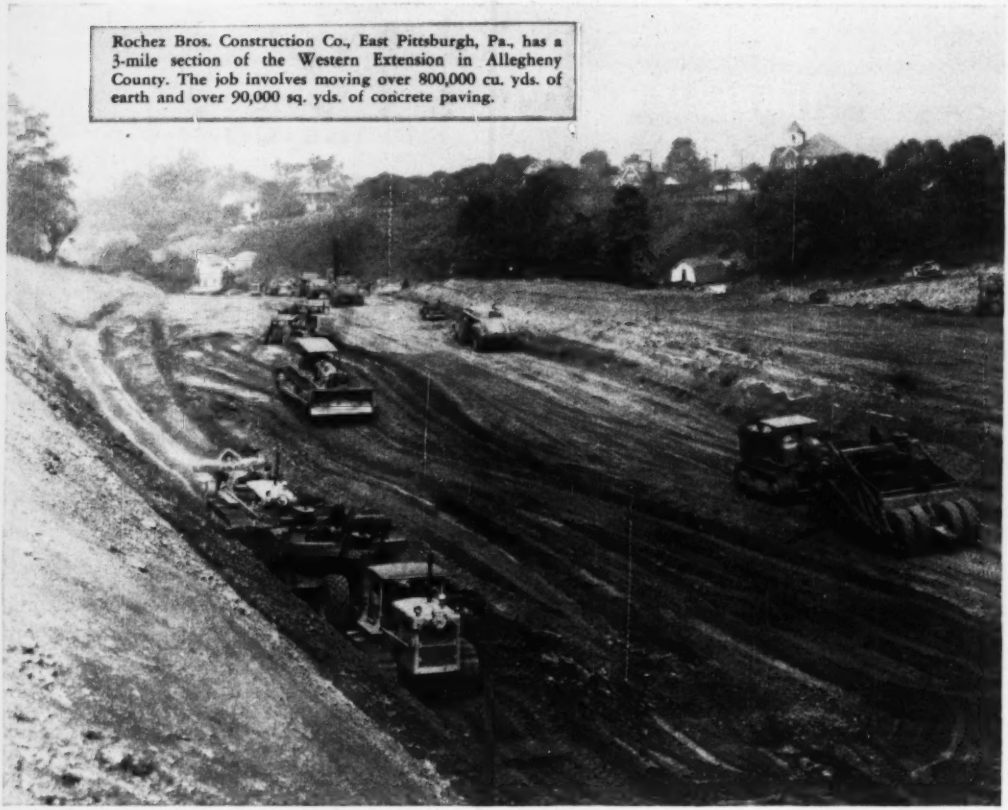
GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling on Western Extension of the Pennsylvania Turnpike



Rochez Bros. Construction Co., East Pittsburgh, Pa., has a 3-mile section of the Western Extension in Allegheny County. The job involves moving over 800,000 cu. yds. of earth and over 90,000 sq. yds. of concrete paving.

THE Western Extension of the Pennsylvania Turnpike is another big and important project where the majority of contractors rely on Gulf to help keep equipment delivering top performance.

Leading contractors, like Rochez Bros. Construction Company for example, know from experience that Gulf quality lubricants provide an extra margin of protection against mechanical delays. And that Gulf fuels insure full engine power and efficiency.

Then, too, they appreciate the engineering counsel Gulf provides to assure the most suitable lubricants and fuels for every unit and operating condition. And Gulf's prompt delivery service.

Let us discuss with you how Gulf products and services can help you on your next job. They are available to you through more than 1200 conveniently located warehouses. Gulf Oil Corporation · Gulf Refining Company, Gulf Building, Pittsburgh, Pennsylvania.

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1901 GULF 1951
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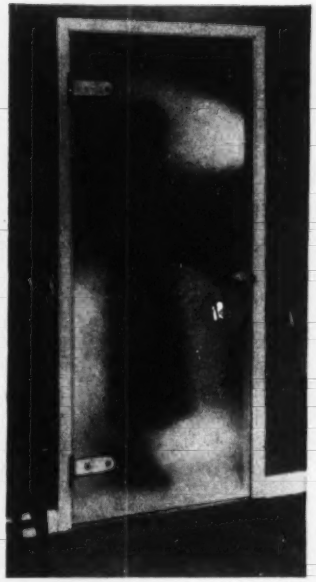
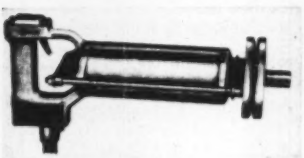


Interior glass doors

Made up in all standard sizes and complete with hardware fittings, these 3-in. thick Blue Ridge glass doors provide privacy while borrowing light from adjoining rooms. With Muralex pattern on both sides, they are completely reversible, the glass being heat-tempered to make it much more resistant than ordinary plate glass. Eight working drawings accompany each shipment showing recommended methods for installation. No special construction is needed when used on wood jambs. With metal, however, hinge recesses must be provided and the stop must be indented at the lock location. LIBBEY-OWENS-FORD GLASS COMPANY, KINGSPORT, TENNESSEE.



Electromagnetic drill

The whole secret behind this new electromagnetic hammer drill is the automatic rotation of its carbide-tipped, spiral-fluted drill which the maker claims will speed up hole drilling, eliminate manual turning of the drill chuck and reduce fatigue. This

(Continued on next page)

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Mica makes a BIG difference! And experienced engineers, contractors and maintenance men know that PLASTEEL — *and only Plasteel* — gives them this BIG difference — MICA'S permanent protection! Mica resists the toughest climatic and atmospheric conditions. Mica needs no paint, no repairs. Mica reflects solar rays. Mica is attractive. Mica prolongs the life of your buildings. Write for details.

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On thousands of earthmoving jobs, Sauerman Scraper machines equipped with the unique Crescent bottomless bucket, are cutting costs in digging, hauling and dumping almost every kind of material.

A Crescent bucket penetrates tough materials with ease, gets a full load quickly, hauls this load at speed of 400 to 600 f.p.m.—all with economical use of power. Write for Catalog.

CRESCENT Scraper buckets are built in five types and fifteen sizes. Pictured above is a ½ cu. yd. size designed for heavy excavating.

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We can help you Figure Your Savings on any Scaffolding Job

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Ezebilt's swivel action makes it especially adaptable for scaffolding cylindrical stacks and other circular structures.
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Standard SUX panels provide three plank bearing levels. Use of brackets increases working area and allows passageway for hod carriers and wheelbarrows.

You can figure your savings with the one best scaffold that is unrivaled for ease of assembly and for economy in operation. Ezebilt's exclusive Gravity-Lock feature helps you erect faster—no nuts, bolts or tools required—makes indoor and outdoor scaffolding jobs easier.

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New products . . .

automatic rotation is accomplished by a rubber ratchet mechanism which is in turn actuated by the recoil of each blow of the piston—3600 blows per minute! Latest in a long line of electric hammers and hammer drills, it is recommended for highspeed hole drilling in concrete, brick and stone. SYNTRON COMPANY, 500 LEXINGTON AVENUE, HOMER CITY, PENNSYLVANIA.

Concrete vibrator

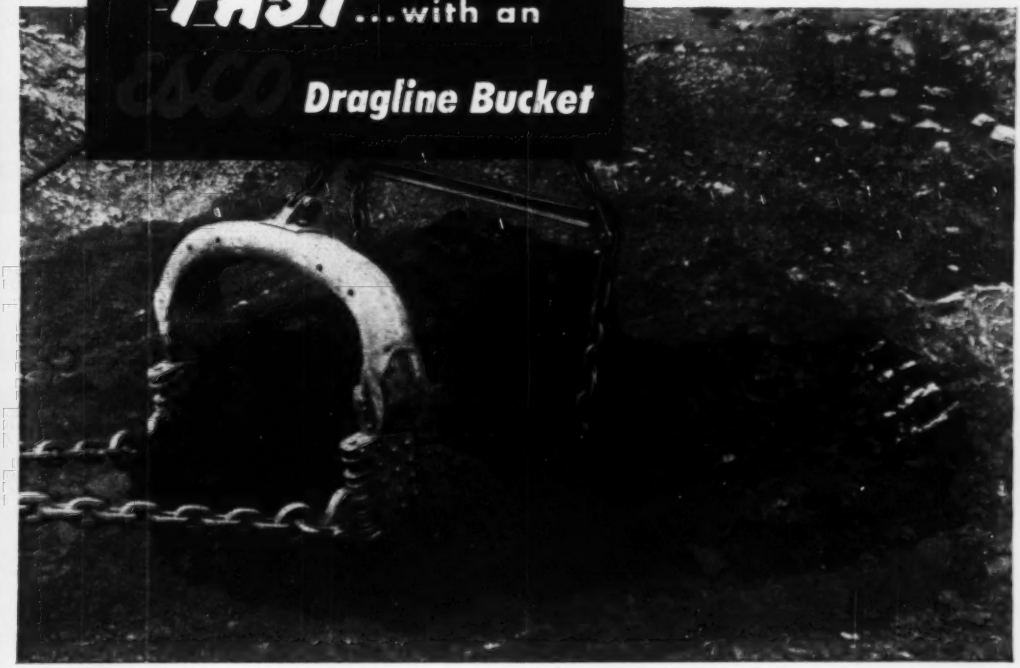
You just can't lose any grease from the bearings of this new Thor concrete vibrator, says its manufacturer, because of an exclusive steel sleeve around the vibrator unit. The new "521" has a steel cylinder 2¾ in. in diameter and 17½ in. long, at the end of a 5-ft. length of combination air and exhaust hose. This latter is replaced with optional 10-, 15-, and 20-ft lengths if desired. Additional features include a roll type throttle providing up to 8,000 vibrations per minute as well as an adjustable automatic air line oiler. INDEPENDENT PNEUMATIC TOOL COMPANY, SALES PROMOTION DEPARTMENT, 175 N. STATE STREET, AURORA, ILLINOIS.

Bonding wood to metal with special adhesives is described in a pamphlet issued by **U. S. Forest Products Laboratory,** Madison, Wis. Three groups are discussed: (1) Direct-bonding, high-temperature setting for critically stressed structures, (2) two-step bonding with adhesive primer and secondary adhesive and (3) direct-bonding, room-temperature-setting groups.

(*Continued on page 103*)

Get Full Loads FAST...with an ESCO Dragline Bucket

ESCO 4-yard standard stripping dragline bucket working in Pennsylvania strip mine. Machine is P&H 1055LC with 80-foot boom.



THE PICTURE above is typical of the short travel needed to get a full load with *ESCO* dragline buckets. Decide for yourself how such fast, full loading will speed work and lower costs on your own jobs.

There are three good reasons why *ESCO* dragline buckets load faster:

Extra width, well proportioned to the bucket as a whole.

Proper balance resulting from correct placing of trunnion brackets and hitch plates.

Correct digging angle of teeth set in streamlined cutting lip.

Rugged construction and elimin. on of useless bulk are other *ESCO* features which pay off in bigger pay-loads, longer service and lowered maintenance costs.

Your nearest *ESCO* representative will give you detailed information about these fast digging buckts; or fill in and mail the coupon for catalog 188, "*ESCO* Dragline Buckets".

ESCO DRAGLINE, DIPPER AND HOE DIPPER BUCKETS

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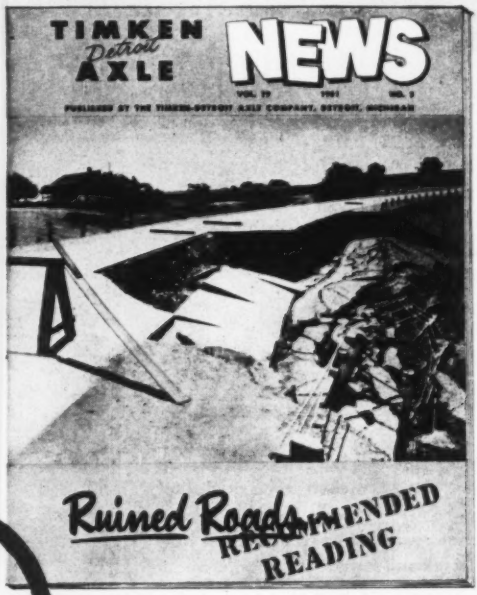
Make, model and boom length of machines used_____

Here are FACTS about America's *Ruined Roads* . . .

THIS IS A SUBJECT OF VITAL INTEREST TO EVERYONE—ESPECIALLY THOSE ASSOCIATED WITH THE TRUCKING INDUSTRY! THE COUPON BELOW BRINGS YOU THE STORY BEHIND AMERICA'S BROKEN HIGHWAYS!



This entire issue of The Timken-Detroit Axle News is devoted to an authentic, factual report by A. B. Gorman on what is causing America's "Ruined Roads." It is a straightforward, interesting—*and very enlightening*—article, complete with unretouched photographs.

Send for Your Free Copy Today!

The Timken-Detroit Axle Company A-3
100 Clark St., Detroit 32, Michigan

Gentlemen: Please send me the story of the "Ruined Roads".

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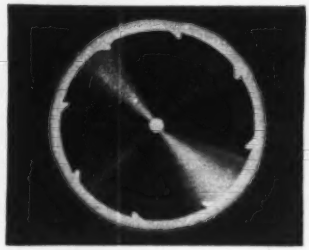

Circular saw blade has only 8 or 12 teeth

New Safti-Cut blade departs radically from conventional designs with only 8 or 12 teeth instead of the usual 60 to 100. These cutting teeth project only .020 inches above the non-cutting edge and produce small chips instead of the usual sawdust. Manufacturer says that the small number of cutting teeth prevents loading up of the blade, which often causes cracking. The non-cutting circular edge also controls depth of bits on each tooth and practically eliminates the possibility of kick-back, or pull-in of the operator's hands. Available in 6 in. to 16 in. sizes with any type arbor hole. WESTERN SAW MANUFACTURERS INC., 1842 W. WASHINGTON BOULEVARD, LOS ANGELES, CALIFORNIA.

New Product Briefs

High viscosity and low pour points are claims of **Gulf Oil Corporation's** new **Gulfpride H.D. (High Detergency) oil**, as well as claimed ability to minimize engine deposits, rust and wear, and clogged oil rings.

About the size of a pocket watch, a new thin, lightweight 6-ft **steel tape** slips easily into your pocket. Only $\frac{3}{8}$-in. wide, the concave blade is said to be thinnest made. "Monitor 206A" is made by **Master Rule Mfg. Co., Inc.**, 40 Mulberry St., Middletown, N. Y.

A new line of bright, eye-catching **safety signs** is available from **Eastern Metal of Elmira, Inc.**, Elmira Heights, N. Y. Danger, caution, and safety first signs, as well as directional signs to eliminate confusion come in bright combinations of yellow, red, black and white. Brochure shows many of these heavy-gage steel signs as well as A-frame standard for "MEN WORKING" street sign designed not to tip over.

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The golden spike

How Canada plans new rails for a continent

The days of railway building are not yet over in Canada.

From the thunder of seven million words, 212 witnesses, 138 days of public sessions, and 153 formal submissions, a Royal Commission that has been investigating Canadian transportation problems since 1948, has emerged with 200,000 weighty words of its own to confirm the above.

Policywise, the commission would set up a Board of Transportation Commissioners to include the present board of this name, plus the Air Transport Board of Canada and the Canadian Maritime Commission.

Aim of the new joint board would be to establish a national transportation policy under the jurisdiction of the federal government affecting all national transportation agencies, railways, aviation, shipping, pipelines, and even inter-provincial and international highway traffic.

• **Rails per person**—But on the railroad front there is some new thinking going on.

Contrasting Canada with the United States, the three-man Commission reported that Canada has many miles of track to build as yet, while railway mileage south of their border has been shrinking since 1917. Rails have not kept pace with increasing population.

But "in Canada the situation is somewhat different," the Commission says. There is still room for railway expansion where it is called for by the needs of the settlers already established in productive areas or by the necessity of making available new areas possessing mineral or other natural resources attainable only by railway.

MAKING THE BED for a Canadian National Railroad line. The bulldozer goes first when terrain allows.

THE FINGER POINTS, as the gang raises the railroad track level six inches.

It seems to be generally assumed that most if not all railway expansion in the foreseeable future will be carried on by the government of Canada or by Canadian National Railways which the government owns. "The day of ill-conceived and therefore excessive construction seems to have gone by," says the Commission, "and our people can feel reasonably assured that from now on no railway ventures will be undertaken excepting after thorough investigation of each project and always with due regard to the financial commitments. . . ."

• **No specifics**—The Royal Commission recommended no specific railway undertakings.

Hanging fire at this time are a variety of projects.

There is 160 miles of line proposed for the Canadian National Railway to link Sherridon, Manitoba to Lynn Lake. There is the stretch between Valmarie and Nonkota in Saskatchewan under consideration for the Canadian-Pacific. There is the CNR extension line to Barraute in Quebec, the Chibougamau mining district.

But the Commission did not recommend any of these.

• **A word to pleaders**—But it did take note of pleas for the northerly and westerly extensions of the Hudson's Bay Railway to Churchill, Manitoba to say that these projects would run through sparsely settled regions, and require large expenditures to put through.

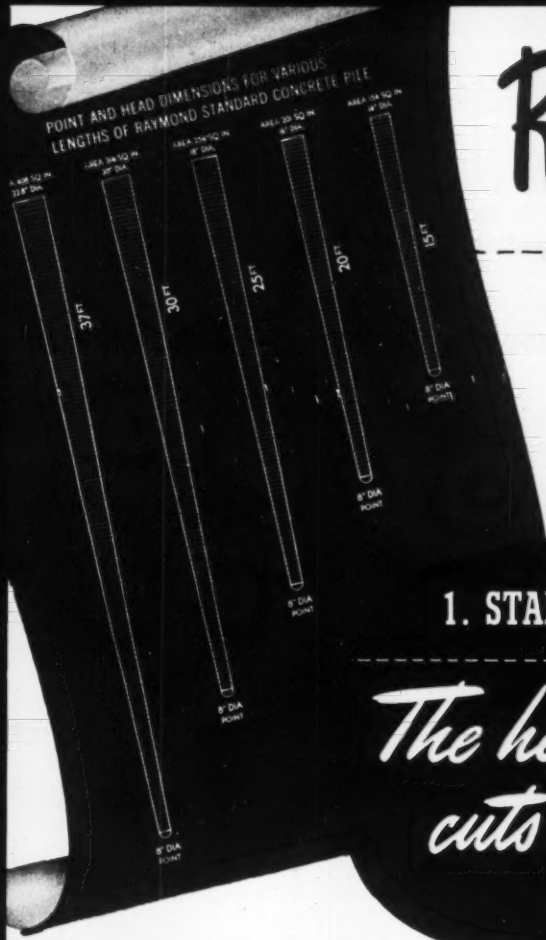
The proposed Chignecto Ship Canal, involving an 18-mile cut across the Isthmus that binds New Brunswick and Nova Scotia (ENR Sept. 7, 1950, p. 128) was also reviewed. The Commission commented on the cost of $100,000,000. It aligned the cost with traffic studies in the area that showed much more carriage by trucks than previously. On this basis the commissioners would not recommend the project to the government.

THE TIE THAT BINDS is a final step. Here a roadman bonds some rails.

• **Something positive**—But there was a positive note in the discussion of the Seven Islands, Quebec, line through virgin woods into the new iron ore deposits of Labrador.

Apparently Canada will have a new formal reorganization of its transportation under a new, superboard. But if the big jobs are going to wait on the government and the policies of this board they will become objects of more public scrutiny, and less private capital.

Whatever the future may hold, progress in building of new line is being made outstandingly by private capital in the Seven Islands program of the mining interests. Actively, it is private initiative that is still on the march.



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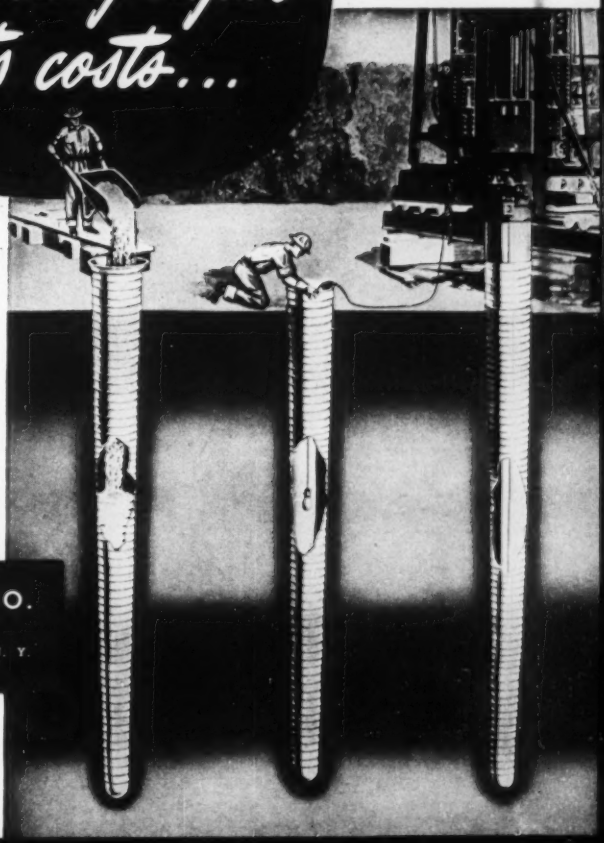
Note that the permanent steel shell maintains the soil pressure developed during driving and while the concrete is setting, thus insuring a perfect pile free from distortion with a high load capacity.

Raymond Standard Concrete Piles have a heavy, uniformly tapered permanent steel shell. On friction piles, this taper acts like a wedge, giving these specific advantages:

1. Driving resistance is maintained.
2. The load is transmitted to the soil through the entire length of the pile.
3. The load can be carried by shorter piles, because of their greater carrying capacity.
4. Since shorter piles cost less to drive, the taper usually results in substantial savings.

Each of these statements has been tested and proved innumerable times. The evidence is at your disposal at any of our offices. Your inquiry is cordially invited.



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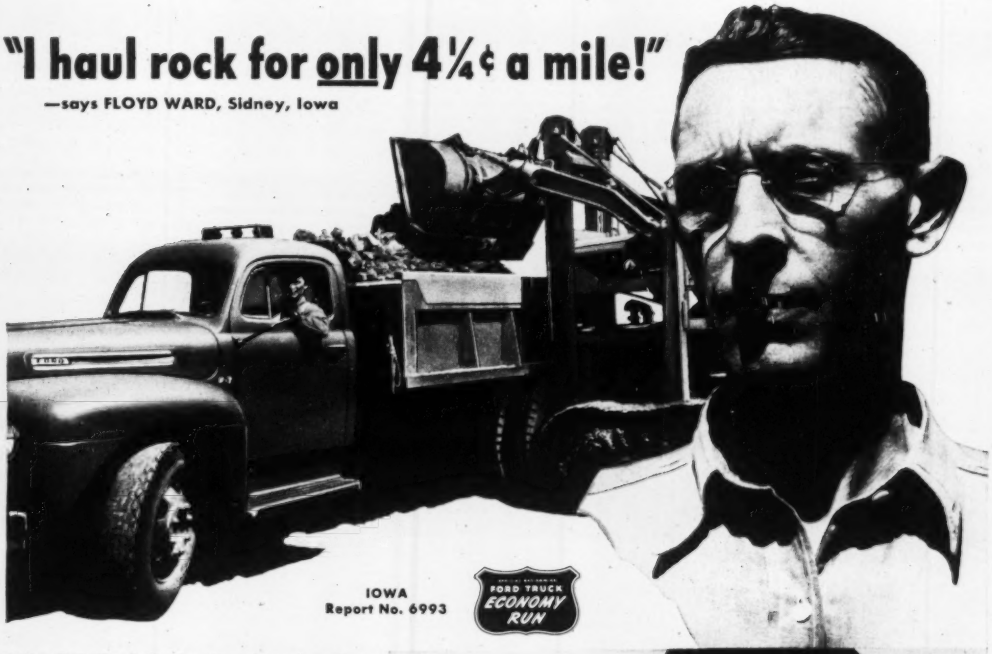
—says FLOYD WARD, Sidney, Iowa



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"My F-7 Ford Dump has less breakdowns and repairs," says Mr. Ward. "In rough going you can't beat Ford for gas, oil and repair economy!"

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"During the 6-month Run, our Ford F-7 traveled 23,068 miles. Loads averaged 14,000 lbs. We spent $973.89 for gas, oil, maintenance and repairs, including $260 for 3 new tires. That's a thrifty cost of only 4.22c a mile!"

Like others who rely on Ford for low running costs, you can be sure of money-saving service from your local Ford Dealer. For more facts on the trucks that last longer *and* save you money every mile—mail coupon below.

This Ford F-6 Dump for '51 is also a favorite with construction haulers. Power choice of 3 great truck engines . . . 100-hp. V-8, 110-hp. Big Six and 95-hp. Six. Available with the 5-STAR Cab or, at additional cost, the 5-STAR EXTRA Cab for more efficient driving, safety and convenience. Single speed rear axle standard, 2-speed axle also available (at extra cost) . . . with wide range of ratios for operating flexibility.

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Address_____
City_____ Zone____ State____
Check here if Student ☐